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State Dairy and Food
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International Pure Food Congress

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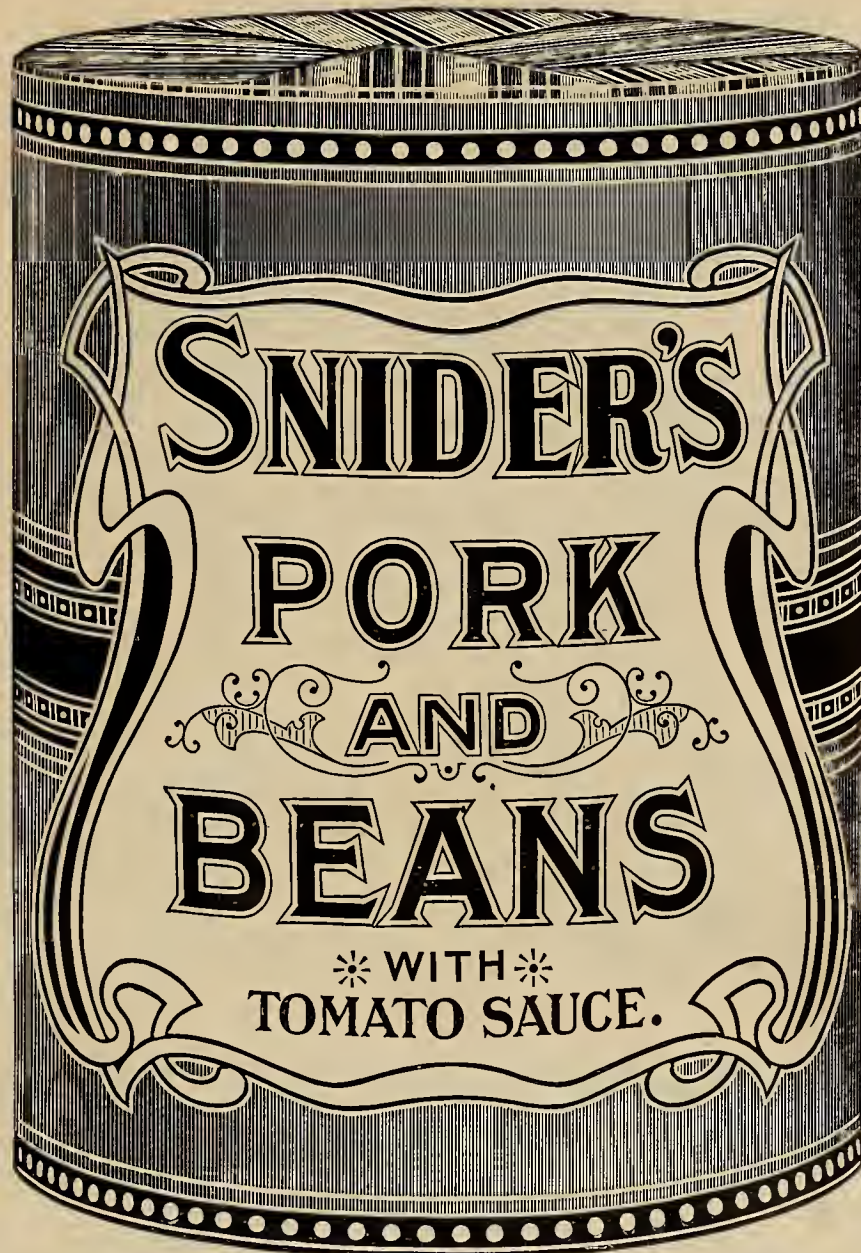
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Journal of Proceedings

OF THE

Eighth Annual Convention

and International
Pure Food Congress

OF THE

National Association of State Dairy and Food Departments

HELD AT THE

Louisiana Purchase
Exposition, St. Louis, Mo.

September 26th to Octo-
ber 1st, 1904, inclusive

**Containing the Only Official Proceedings of the Eighth
Annual Convention and International Pure Food Congress**

Published under the personal direction of the Executive Committee of the National Association
of State Dairy and Food Departments. Copyrighted, 1904, by Herman B. Meyers, Editor and Compiler

Ninth Annual Convention, Portland, Oregon, (Lewis and Clark Centennial), July 10th to 15th, 1905

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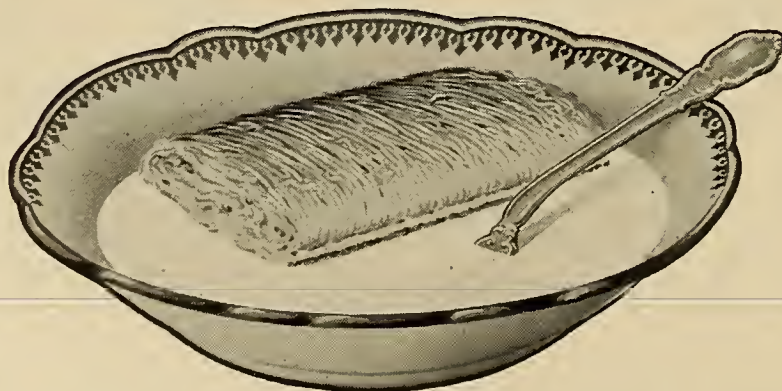
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THE SAMPLE OF Wilson Whiskey. (purchased by us May 9th, 1905.)
MARKED The Wilson Distilling Co.
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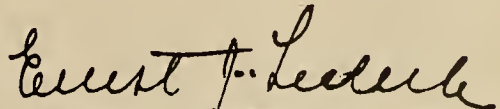
Degree Proof	91.30%
Total Solids (extract)	0.206%
Mineral Matter (ash)	0.006%
Reducing Sugars	0.037%
Fusel Oil	0.141%
Volatile Acids	0.015%
Volatile Ethers	0.025%
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Furfurol	Very small amount.
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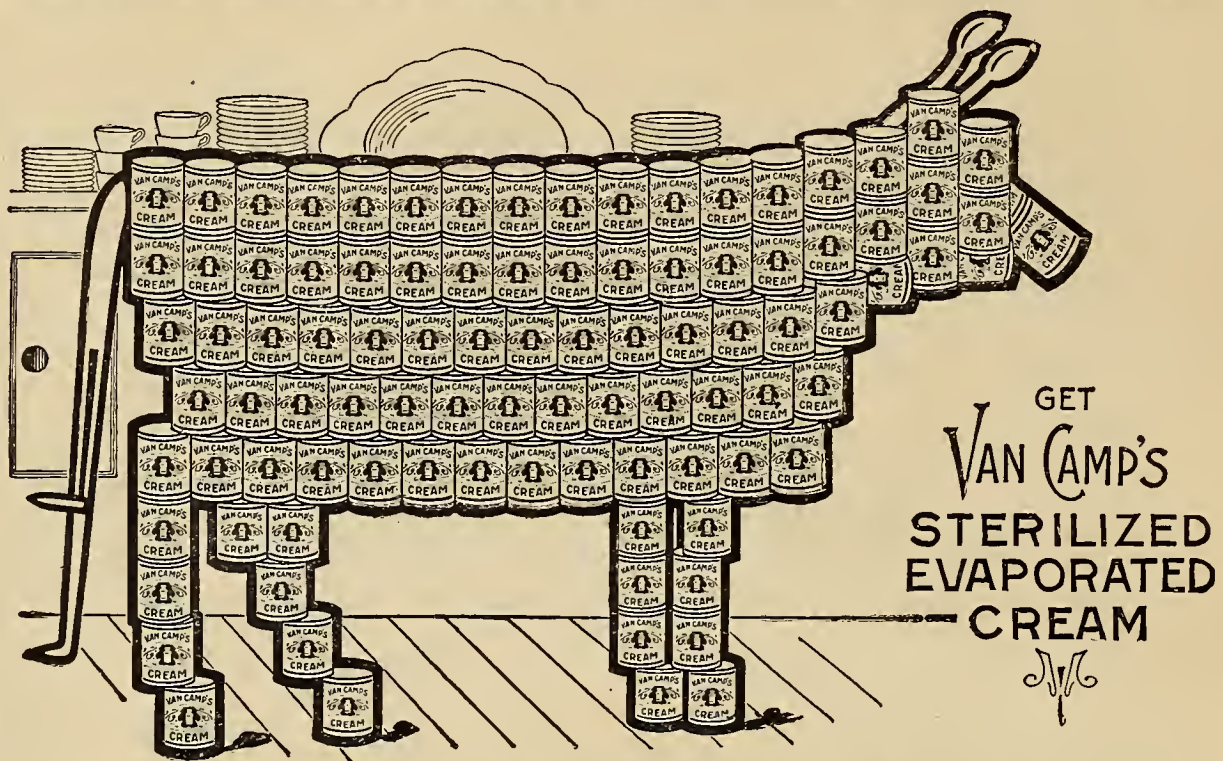
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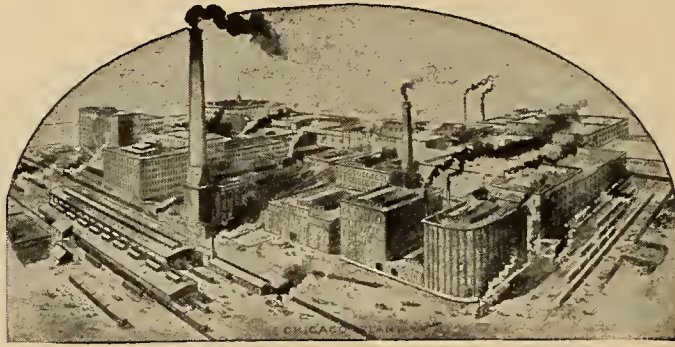
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Edward N. Eaton.....	Illinois
Victor C. Vaughn.....	Michigan
Herman Harms	Utah
Julius Hortvet	Minnesota
Theodore Wetterstroem	Ohio
B. H. Warren	Pennsylvania

COMMITTEE TO REPORT RESOLUTION ON BAKING POWDERS.

Horace Ankeny	Chairman, Ohio
Moroni Heiner	Utah
M. A. Scovell.....	Kentucky
A. Cressy Morrison.....	New York
J. W. Mallet.....	Virginia
W. W. P. McConnell	Minnesota
E. A. McDonald	Washington
A. L. Knisley	Oregon

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Albert Von Stribal.....	Austria
Salvadore Cordova	Honduras
Jules Carlier	Belgium
Benj. Vidaurre	
Dr. Cuto	Brazil
R. M. Allen	Kentucky

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.....	Chairman, Belgium
Commissioner General G. Von Stibral.....	Austria
Chevalier G. Rossati.....	Italy
Dr. Graco Cuto.....	Brazil
Dr. Salvador Cordova.....	Honduras
Dr. H. W. Wiley.....	U. S. Dept. of Agriculture
Sec'y R. M. Allen.....	

Nat'l Assn. of State Dairy and Food Depts.

OFFICIAL TITLES AND NAMES OF STATE DEPARTMENTS CHARGED WITH ENFORCING DAIRY AND FOOD LAWS.**ARIZONA.****TERRITORIAL BOARD OF HEALTH. PHOENIX.**

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STATE DAIRY AND FOOD BUREAU, 114 CALIFORNIA ST.,  
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Dr. Thos. Flint of San Benito County.

John Flannery of Santa Clara County (de-  
ceased).

John M. Thomas, Agent and Secretary.

Wm. H. Saylor, Chemist and Assistant Secretary.

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## DENVER.

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Ella L. Wright, Deputy Commissioner.

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## HARTFORD.

J. B. Noble, Commissioner.

R. O. Eaton, Deputy Commissioner.

A. L. Winton, Agricultural Experiment Station,  
New Haven, Chemist.

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## ATLANTA.

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R. F. Wright, Asst. Com. of Agriculture.

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## BOISE CITY.

Alex. McPherson, Commissioner.

A. E. Gipson, Secretary.

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## CHICAGO.

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R. M. Patterson, Assistant Food Commissioner.

E. N. Eaton, State Analyst.

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## INDIANAPOLIS.

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Commissioner.

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## DES MOINES.

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W. E. Smith, Deputy Dairy Commissioner.

P. H. Kieffer, Assistant Dairy Commissioner.

W. S. Smarzo, Assistant Dairy Commissioner.

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## LEXINGTON.

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R. M. Allen, Secretary and Executive Officer,  
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J. O. La Bach, Chemist, Food Division.

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Shippen Wallace, Analyst.

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William McPherson, Chemist, Columbus.  
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J. H. Beal, Chemist, Scio.  
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Thomas Huggins, Tacoma, Wash., Deputy Dairy and Food Commissioner.  
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It is not only endorsed by most eminent authority for its Purity and Wholesomeness, but receives the commendation of the best housekeepers and teachers of cookery in America, for the light, delicate food made from its use, its great strength and keeping qualities.

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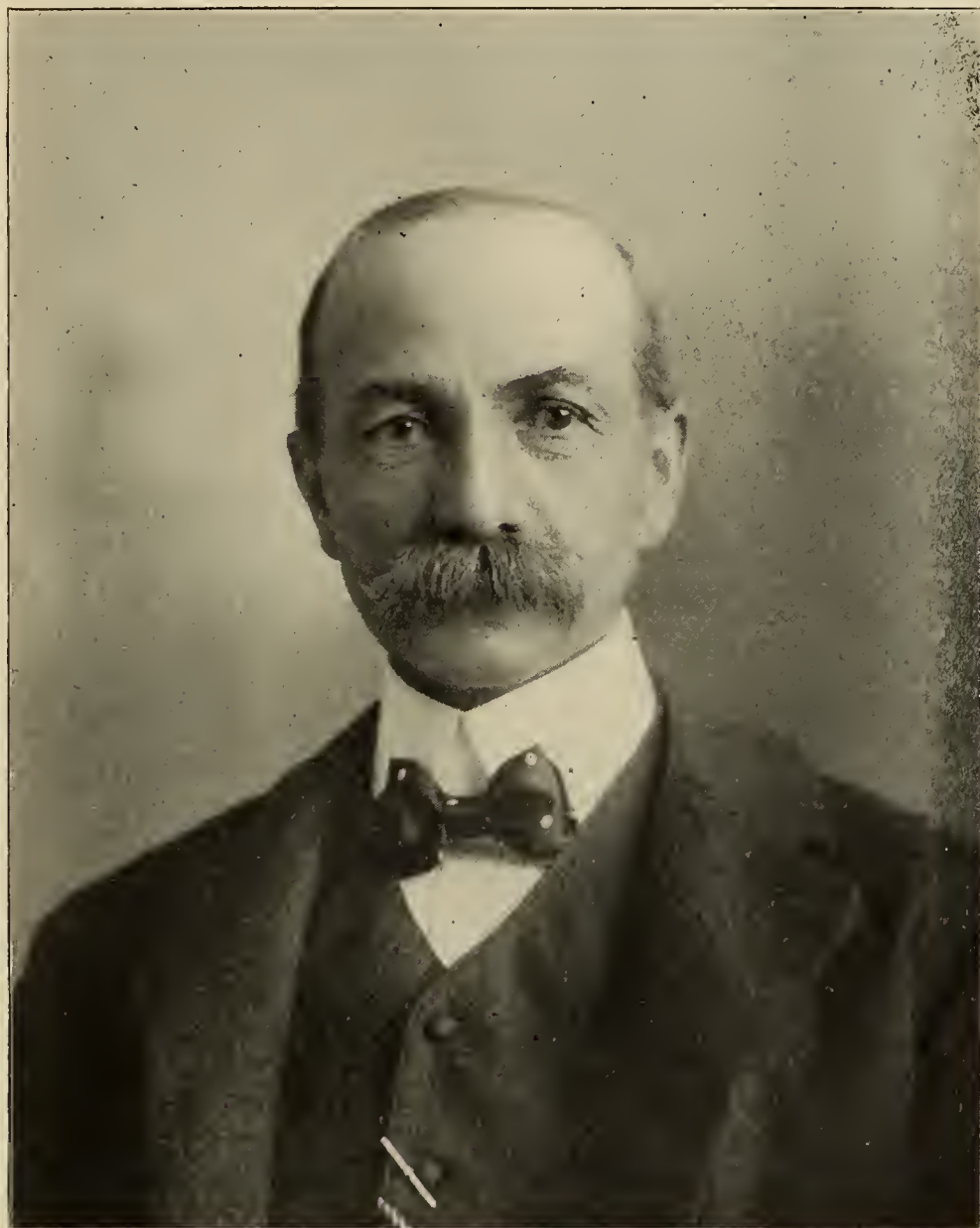


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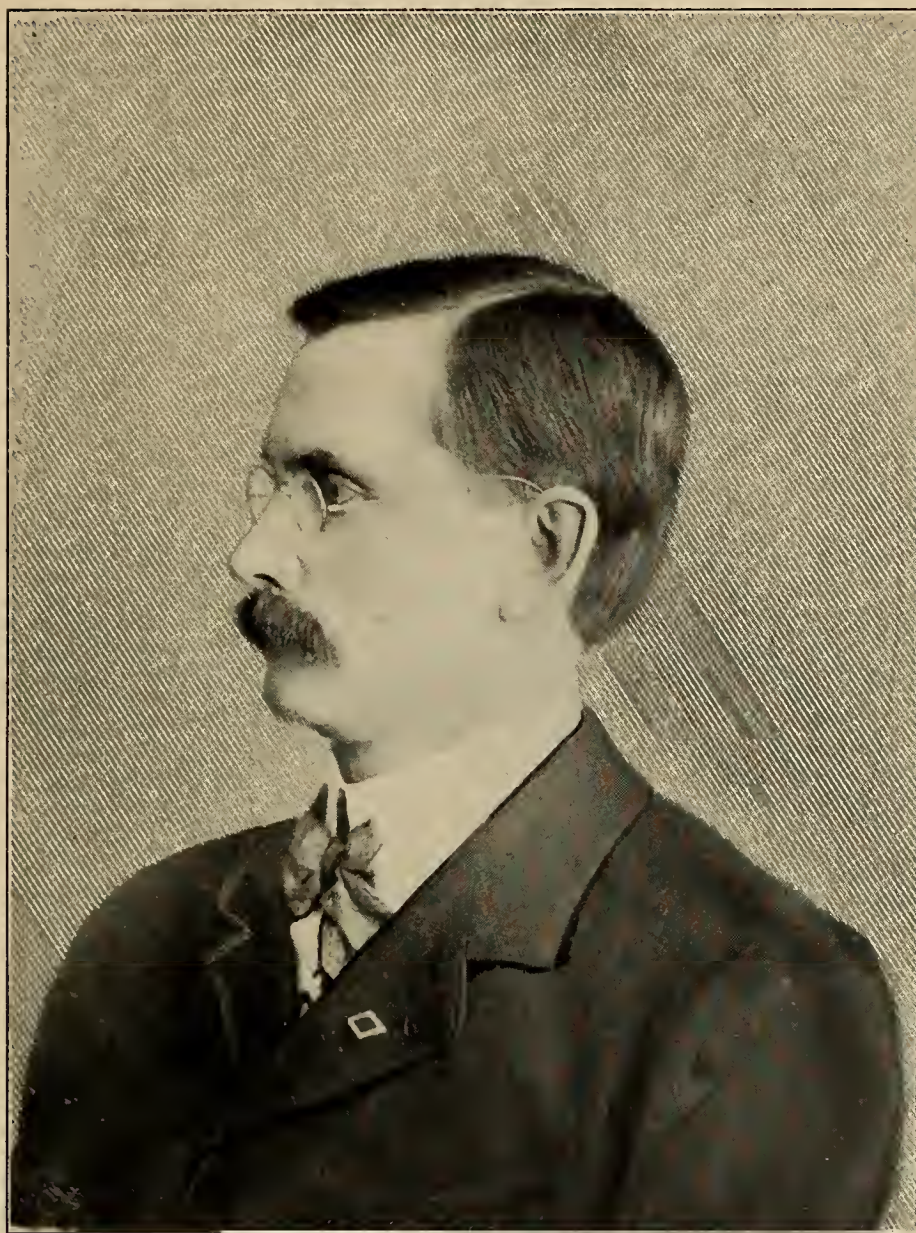
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There is no element of  
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It is good beyond compare

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We guarantee this product (OLD FORESTER WHISKY) to be absolutely free from cologne spirits or any extraneous impurities, and we invite analysis from any State Department, or any other source.

Highest  
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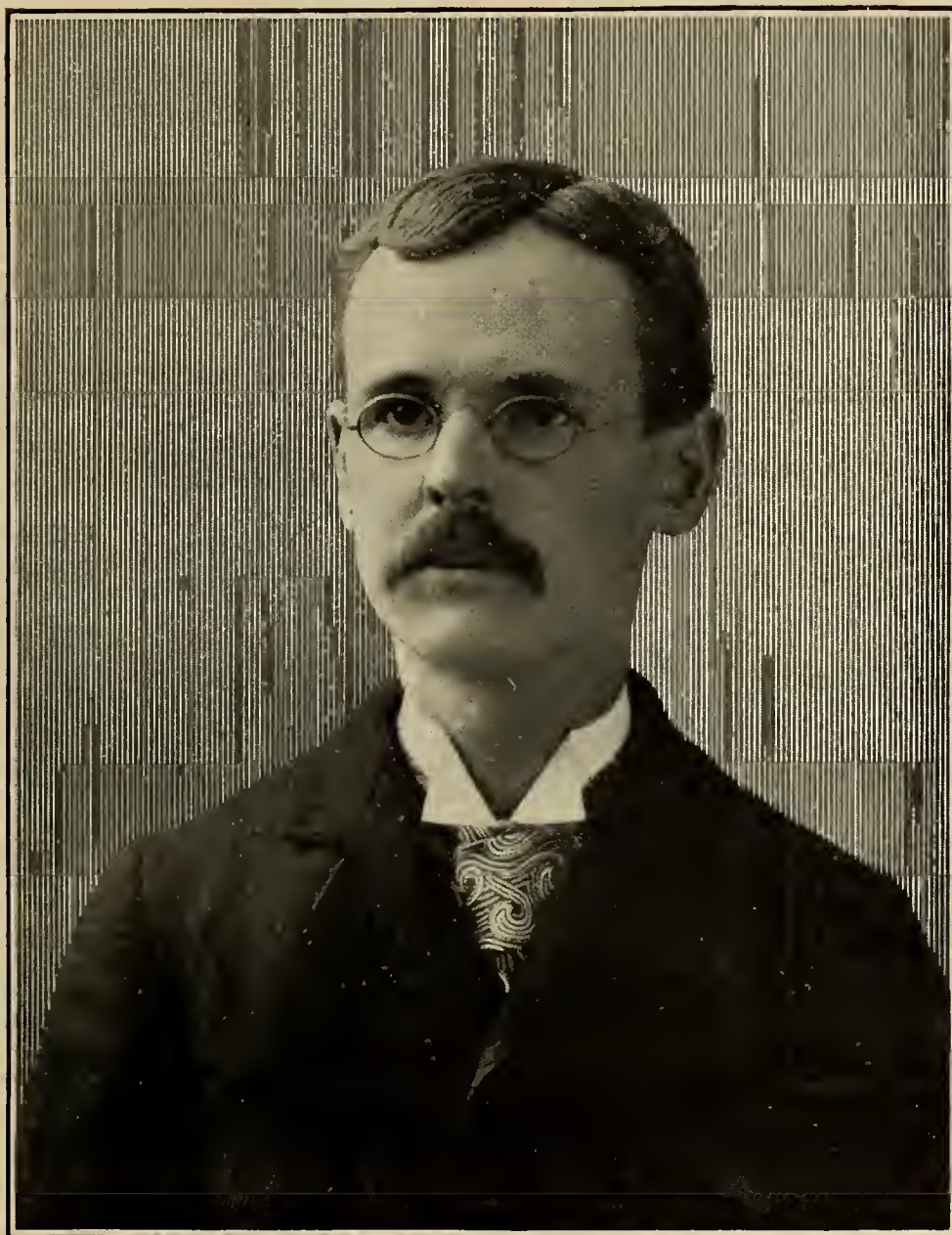
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We do not try to compete in price with other brands,  
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##### Silver Medal

Massachusetts Charitable  
Mechanics' Association,  
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Atlanta, 1891



#### AWARDS

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Exposition,  
Chicago, 1903.

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Tomato Catsup,  
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✿ ✿ FAULTLESS FLAVOR AND QUALITY ✿ ✿

USED BY ALL THE BEST PEOPLE.  
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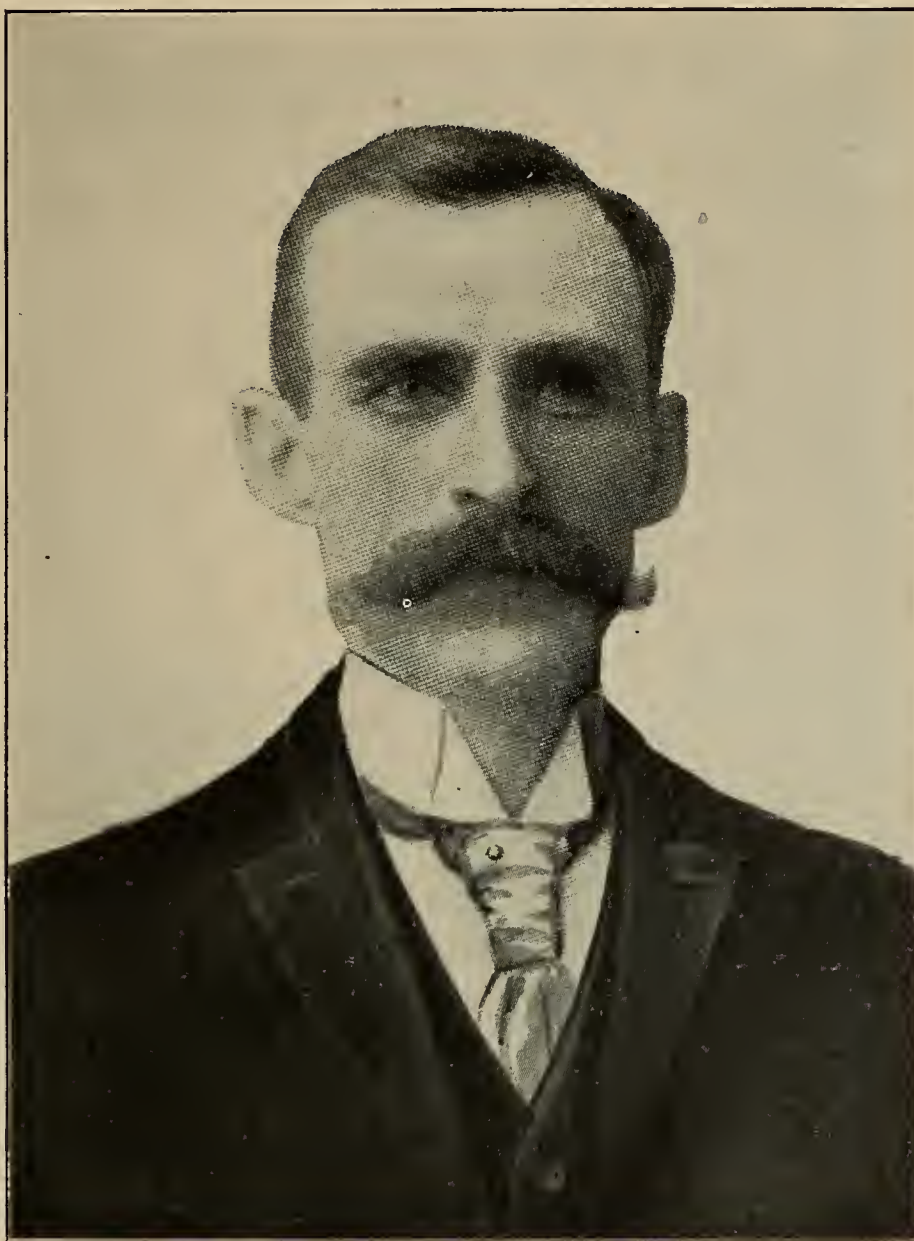
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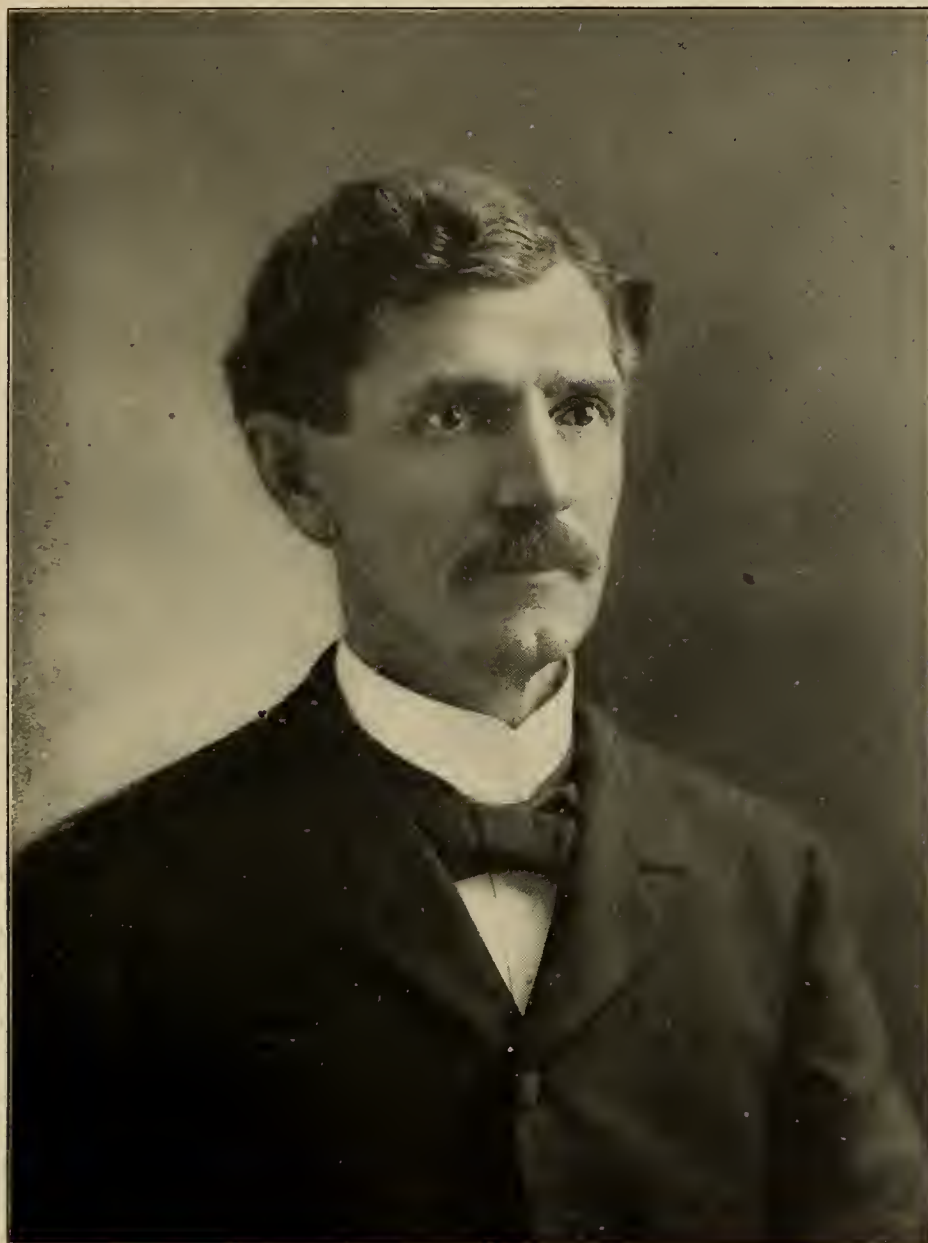
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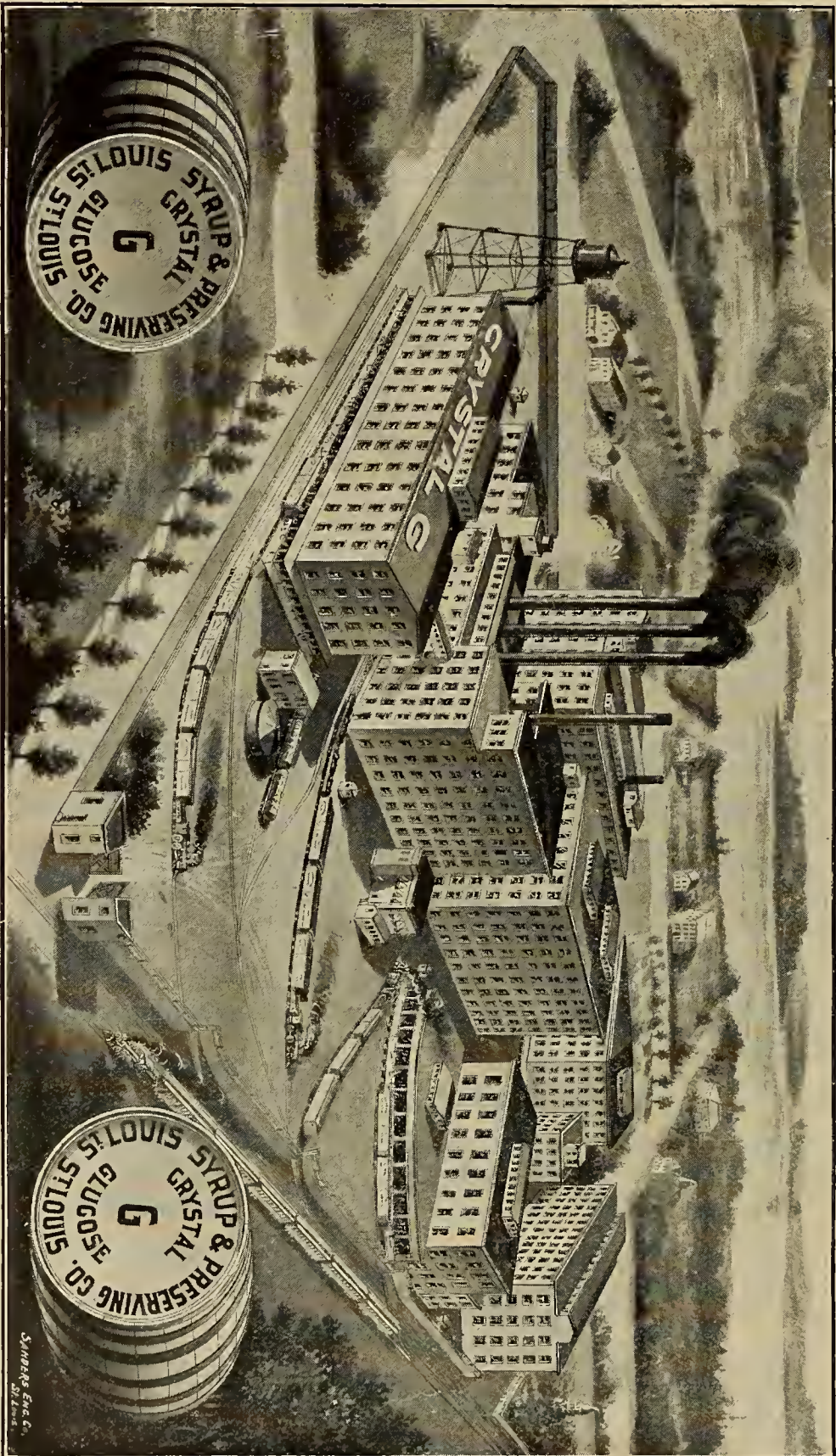


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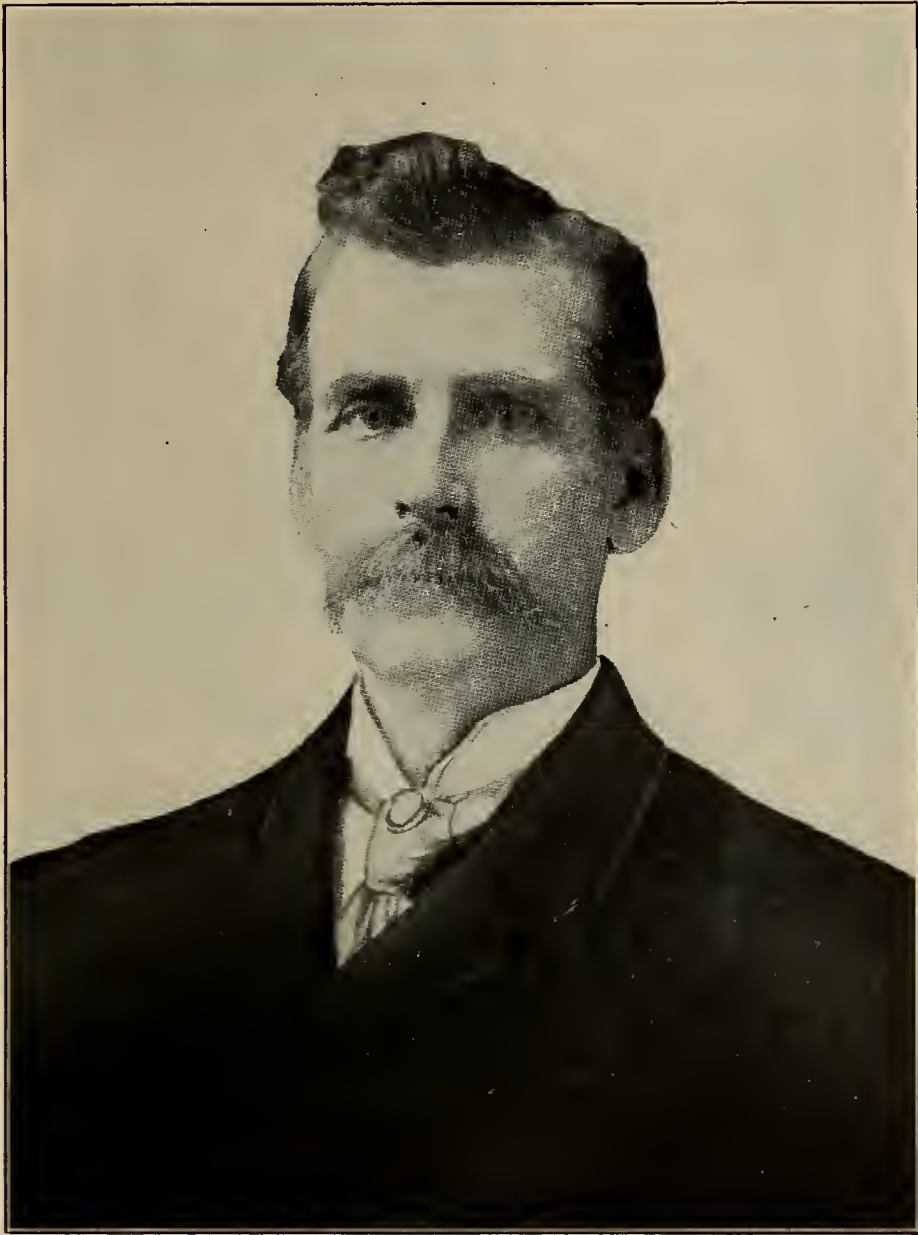
Glucose, Syrup, Grape Sugar and Corn Products



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Manufacturers of

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Waukegan, Ill.

PROGRAM  
FOR THE  
NINTH ANNUAL COVENTION  
OF THE  
National Association of  
State Dairy and Food Departments

TO BE HELD AT  
Portland, Oregon, July 10, 11, 12, 13, 14 and 15, 1905

HEADQUARTERS: AMERICAN INN  
Meetings to be held in the Auditorium  
THE LEWIS-CLARK EXPOSITION

OFFICERS OF ASSOCIATION.

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J. B. Noble, Connecticut, Vice-President.  
C. P. Sherwood, South Dakota, Second Vice-President.  
Albert E. Leach, Massachusetts, Third Vice-President.  
R. M. Allen, Kentucky, Secretary-Treasurer.

LEGISLATIVE AND EXECUTIVE COMMITTEE.

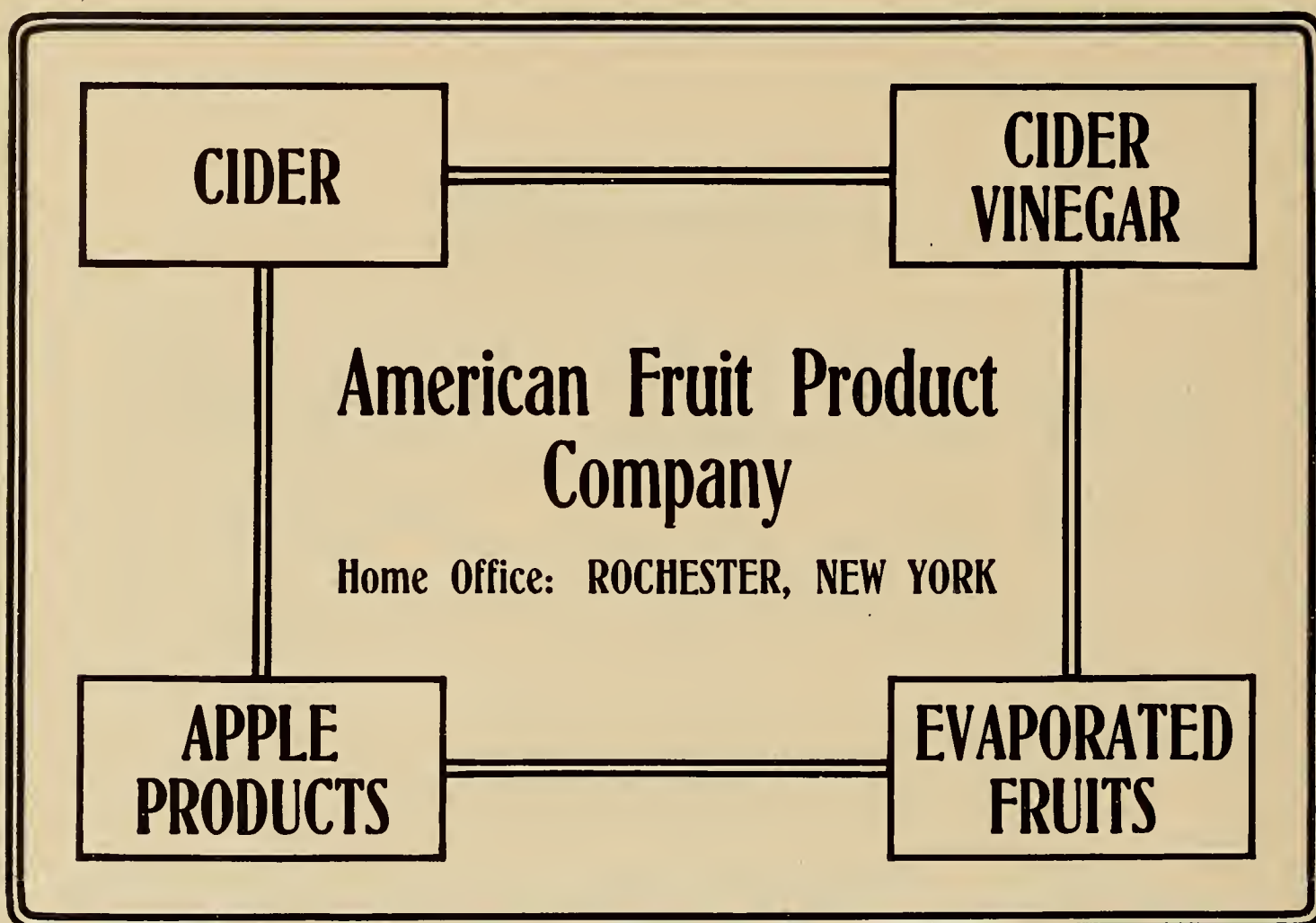
The President of the Association, Chairman.  
The Secretary of the Association, Secretary.  
A. H. Jones, Illinois.  
E. A. McDonald, Washington.  
Horace Ankeney, Ohio.

MONDAY, JULY 10, 1905—1 P. M.

Address of Welcome.....Hon. Geo. E. Chamberlain, Governor of Oregon  
(On behalf of the State.)  
Address of Welcome.....Hon. J. W. Bailey, Oregon  
(On behalf of the State Dairy and Food Department.)  
Address of Welcome.....Dr. Harry Lane, Mayor of Portland  
(On behalf of the City.)  
Address of Welcome.....Hon. H. W. Goode, Pres. Lewis-Clark Expo.  
(On behalf of the Lewis-Clark Exposition.)  
Response.....Hon. J. B. Noble, Hartford, Conn.  
(On behalf of the Association.)  
Address.....Hon. W. W. P. McConnell, Mankato, Minn.

EXECUTIVE SESSION.

Reports of Committees and Officers, appointment of Committees.



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**The Standard Medicinal Whiskey** for nearly half a century. An ideal tonic and stimulant; a specific for Coughs, Colds, "Grippe," Malaria, Dyspepsia and Indigestion in all its forms. **WILL REALLY CURE** Consumption if taken in time and according to directions. May be sold by druggists as a medicine without payment of the U. S. Special Tax as Liquor dealers. **Write for free medical booklet.**

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## TUESDAY, JULY 11, 1905—9 A. M.

Address....."A National Food Law"  
 Hon. Horace Ankeney,  
 State Dairy and Food Commissioner of Ohio.

## DISCUSSION.

Hon. John A. Bliss, State Dairy Commissioner, San Francisco, California.  
 Hon. R. M. Allen, Secretary and Executive Officer, Food Division Kentucky  
 Experiment Station, Lexington, Kentucky.

Hon. A. H. Jones, Illinois State Food Commissioner, Chicago, Illinois.

Hon. J. B. Noble, State Dairy Commissioner, Hartford, Conn.

Address....."Means of Securing Purity in Dairy Products"  
 Hon. J. Q. Emery,  
 State Dairy and Food Commissioner, Madison, Wis.

Address....."The Economical Production of Pure Milk"  
 Hon. M. A. Scovell,  
 Director Kentucky Experiment Station, Lexington, Ky.

Address....."Controlling the Milk Supply of a Large City"  
 Hon. R. M. Patterson,  
 Assistant Illinois State Food Commissioner, Chicago, Ill.

## DISCUSSION.

Hon. H. V. Tartar, Assistant Dairy and Food Commissioner, Portland, Ore.

Address....."Color and Antiseptics in Butter"  
 Hon. Edward K. Slater,  
 State Dairy and Food Commissioner, St. Paul, Minn.

Adjournment.

## WEDNESDAY, JULY 12, 1905.

Address....."A Uniform State Food Law"  
 Hon. A. H. Jones,  
 Illinois State Food Commissioner, Chicago, Ill.

## DISCUSSION.

Hon. F. J. H. Kracke, Assistant Commissioner of Agriculture of New  
 York, New York City, N. Y.

Address....."The Label"  
 Hon. R. M. Allen,  
 Secretary and Executive Officer Food Division, Experiment  
 Station, Lexington, Ky.

Address....."South Dakota Law and Its Enforcement"  
 Hon. E. W. Smail,  
 State Dairy and Food Commissioner, Webster, S. D.

Address....."The Effect of the Enforcement of a Food Law on the  
 Production of Horticultural Products."

Hon. Alex. McPherson,  
 Secretary Idaho State Board of Agriculture, Twin Falls, Idaho.

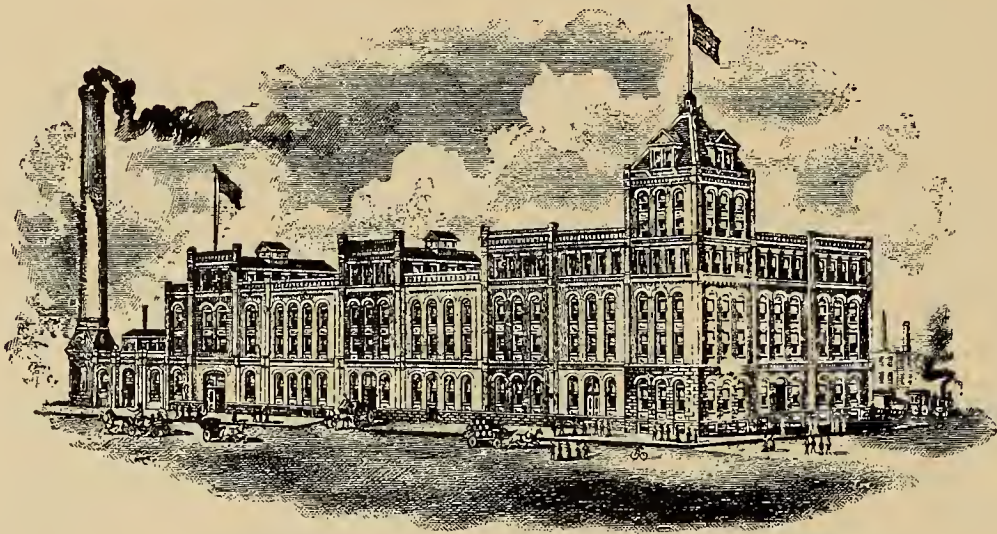
Address....."Co-operation Between the Department and Manufacturers"  
 Hon. A. C. Bird,  
 Food Commissioner, Lansing, Mich.

Address....."Co-operation Between the Department and Grocers"  
 Hon. Jno. Peterson,  
 State Dairy and Food Commissioner, Salt Lake City, Utah.

Address....."Adulteration of Vinegar"  
 Prof. A. L. Knisely,  
 State Analyst, Oregon State Dairy and Food Commission,  
 Portland, Ore.

# Illinois Vinegar Manufacturing Company

The Largest Vinegar Factory in the World.



We Guarantee our Vinegar to Comply with the Pure Food Laws. For Further Particulars, address

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**T. W. SAMUELS,**

NELSON COUNTY, KY.

**SHENANDOAH RYE**

BLENDERS OF FINE WHISKIES

**1863-CHESTERFIELD RYE-1863**

## THURSDAY MORNING, JULY 13, 1905—9 A. M.

Address....."Pure Food Laws in Their Relation to Agriculture"  
 Prof. James Withycombe,  
 Director Oregon Experiment Station, Corvallis, Ore.

Address....."Aniline Dyes in the Standards Governing Coloring in Food"  
 Prof. J. H. Shepard,  
 Chemist, State Dairy and Food Commission, Agricultural  
 Experiment Station, Brookings, S. D.

## DISCUSSION.

Prof. E. L. Redfern, State Analyst, Lincoln, Neb.  
 Address....."Antiseptics in Standards for Foods"  
 Dr. B. W. Kilgore,  
 State Analyst N. Carolina Department of Agriculture, Raleigh, N. C.

## DISCUSSION.

Dr. Wm. H. Saylor, State Chemist and Assistant Secretary, California  
 State Dairy Bureau, San Francisco, Cal.

Address....."Meats and Meat Standards"  
 Hon. E. F. Ladd,  
 North Dakota State Food Commissioner, Fargo, N. D.

## DISCUSSION.

Dr. Henry G. Knight, State Analyst, Wyoming.  
 Address....."Some Glimpses Into a Food Chemist's Note Book"  
 Dr. Richard Fischer,

State Chemist, Wisconsin Dairy and Food Commission, Madison, Wis.  
 Address....."On the Witness Stand"  
 Prof. J. O. La Bach,

Chemist Food Division Kentucky Experiment Station, Lexington, Ky.  
 Address....."The Use of Saccharine in Food Products"  
 Dr. Julius Hortvet,

Chemist Minnesota State Dairy and Food Commission, St. Paul, Minn.  
 Address...."The Growth of the Dairy and Cheese Industry in Colorado"  
 Hon. Mary E. Wright,  
 Dairy Commissioner of Colorado, Denver, Colorado.

## FRIDAY, JULY 14, 1905.

Address....."Antiseptics in Fruit and Fruit Products"  
 Dr. Wm. H. Saylor,  
 State Chemist and Assistant Secretary California State Dairy  
 Bureau, San Francisco, Cal.

Address....."The Use of Antiseptics in the South"  
 Hon. T. K. Bruner,  
 Secretary North Carolina Board of Agriculture, Raleigh, N. C.

Address....."Drug Adulteration"  
 Dr. T. D. Wetterstroehm,  
 Chemist, Ohio Dairy and Food Commission, Cincinnati, O.

Address....."The Labeling of Drugs and Medicines"  
 Dr. Herman Harms,  
 Chemist, Utah Dairy and Food Commission, Salt Lake City, Utah.

Address...."The Field Inspector—How Can His Efficiency Be Increased?"  
 Dr. Elton Fulmer,

Chemist, Washington Dairy and Food Commission, Pullman, Wash.  
 Address....."State vs. National Standards"  
 Dr. E. N. Eaton,

Analyst, Illinois State Food Commission, Chicago, Ill.  
 Address....."The Federal Inspection of Dairy Products"  
 Hon. E. A. McDonald,

State Dairy and Food Commissioner, Seattle, Wash.  
 Address....."Food Control Literature"  
 Dr. Albert E. Leach,  
 Analyst, State Board of Health, Boston, Mass.

## SATURDAY, JULY 15.

Reports of Committees. Election of Officers. Executive Business Session.

# CALUMET BAKING POWDER

Complies with the Pure Food Laws of all States

The perfect baking powder is the one which will evolve the most gas and leave the smallest and most nearly neutral residue in the food. A chemical examination of the many brands of baking powder on the market will show an enormous majority of them to be not only weak in gas, but either strongly acid or alkaline in reaction. Sweet, palatable food cannot be prepared with these powders. The bread will be bleached and bitter on the one hand or yellow and alkaline on the other. This condition results from manufacturers working with a fixed formula year in and year out, regardless of the strength of their material.

The makers of Calumet Baking Powder employ a competent chemist who submits all material to analysis and determines its strength. This material is then accurately portioned to produce a baking powder neither acid or alkaline, but perfectly neutral. It is the application of these methods that has gained for Calumet Baking Powder its reputation for strength, purity and uniformity.

## CALUMET IS A PERFECT BAKING POWDER

Food Prepared with it is Free from Rochelle Salts, Alum, Lime or Ammonia

Chicago, April 1, 1905.

Whereas, objections have been made to the remarks of certain persons in their addresses herein; now, we, the Executive Committee, on behalf of the Association, do hereby expressly decline to be responsible for the said remarks which are published with the understanding that this Committee does not hold itself or the Association liable for the views or ideas of those persons participating in the proceedings herein.

W. C. F. McConnell  
Alfred H. Jones  
Horace A. Kenney  
R. H. Allen, Secretary



**RICHELIEU  
FERNDELL  
BATAVIA**

**OUR BRANDS PURE FOODS**

**Sprague, Warner  
and Company**

**WHOLESALE GROCERS**

**Chicago    U. S. A.**

Only selected goods packed under our Richelieu, Ferndell  
and Batavia labels, so prepared that the finished product  
is of the highest quality and ABSOLUTELY HEALTHFUL

Journal of Proceedings  
OF THE  
Eighth Annual Convention  
AND  
International Pure Food Congress  
OF THE  
National Association of State Dairy and  
Food Departments

---

St. Louis, Mo., September 26th to October 1st, 1904,  
inclusive.

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HERMAN B. MEYERS, Editor and Compiler. CHAS. A. BOOS, Reporter.

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**OPENING SESSION.**

September 26, 1904, 2 o'clock p. m.

PRESIDENT BAILEY: The convention will please come to order. I will ask the delegates and their friends in the rear of the hall to please come forward and take seats in front, and if there are any representatives of foreign countries or any manufacturers present who have not registered, they will find the book on the Secretary's table.

The following list of representatives were registered:

J. W. Bailey, President, State Dairy and Food Commissioner, Portland, Ore.

W. W. P. McConnell, First Vice President, State Dairy and Food Commissioner, St. Paul, Minn.

Moroni Heiner, Second Vice President, State Dairy and Food Commissioner, Salt Lake City, Utah.

Horance Ankeney, Third Vice President, State Dairy and Food Commissioner, Columbus, Ohio.

R. M. Allen, Secretary and Treasurer, Secretary Food Division Kentucky Experiment Station, Lexington, Ky.

A. H. Jones, State Dairy and Food Commissioner, Chicago, Ill.

J. B. Noble, State Dairy Commissioner, Hartford, Conn.

N. B. Critchfield, Secretary Department of Agriculture, Harrisburg, Pa.

M. A. Scovell, Director, Kentucky Experiment Station, Lexington, Ky.

J. Q. Emery, State Dairy and Food Commissioner, Madison, Wis.

E. F. Ladd, State Food Commissioner, Fargo, N. D.

C. P. Sherwood, State Dairy and Food Commissioner, De Smet, S. D.

Dr. H. W. Wiley, Chief, Bureau of Chemistry, Department of Agriculture, Washington, D. C.

Mrs. Mary Wright, State Dairy Commissioner, Denver, Colo.

Miss Ella Wright, Assistant State Dairy Commissioner, Denver, Colo.

E. A. McDonald, State Dairy and Food Commissioner, Seattle, Wash.

A. McPherson, Dairy Food and Oil Commissioner, Boise, Idaho.

John A. Bliss, Chairman, California State Dairy Bureau, San Francisco, Cal.

H. B. Meyers, Chicago, Ill.

Wm. N. Berkeley, Phd. Chemical Laboratory, Bureau of Health, San Juan, Porto Rico.

Gen. Jules Carlier, Commissioner General of Belgium.

Dr. Salvadore Cordova, Honduras.

Jaime Aunexy, President, Porto Rican Commission, San Juan, Porto Rico.

Guido Rossati, representing Italian Ministry of Agriculture, New York City.

Dr. A. D. Grasa Cento, Rio de Janeiro, Brazil.

Gen. G. Von Stibral, Vienna, Austria.

Benjamin Vidaurre.

Dr. Cuto.

R. M. Patterson, Assistant State Dairy and Food Commissioner, Chicago, Ill.

H. V. Tarter, Assistant State Dairy and Food Commissioner, Portland, Ore.

Albert E. Leach, Chemist, Massachusetts State Board of Health, Boston, Mass.

Robert O. Eaton, Assistant State Dairy Commissioner, New Haven, Conn.

Edward N. Eaton, Illinois State Analyst, Chicago, Ill.

P. L. Hobbs, Chemist, Ohio Food Commission, Cleveland, Ohio.

H. E. Barnard, Chemist, State Board of Health, Concord, N. H.

A. L. Kniseley, State Chemist, Portland, Ore.

Herman Harms, State Chemist, Salt Lake City, Utah.

Richard Fischer, State Chemist, Madison, Wis.

L. F. Kebler, Bureau of Chemistry, Department of Agriculture, Washington, D. C.

Julius Hortvet, State Chemist, St. Paul, Minn.

J. S. Burd, Consulting Chemist, Idaho Food Commission, Moscow, Idaho.

W. D. Bigelow, Chief, Division of Foods, U. S. Department of Agriculture, Washington, D. C.

J. O. LaBach, Chemist, Kentucky Experiment Station, Lexington, Ky.

Blaine Danley, Nashville, Tenn.

Chas. A. Boos, Chicago, Ill.

J. W. Mallet, University of Virginia, Va.

H. M. Bishop, M. D., Los Angeles, Cal.

W. A. Withers, West Raleigh, N. C.

V. C. Vaughn, Ann Arbor, Mich.

Fred DeLand, Pittsburgh, Pa.

Maude Sayers DeLand, Pittsburgh, Pa.

H. O. Averill, Hartford, Conn.

A. R. Holmes, Cleveland, Ohio.

Paul Pierce, Chicago, Ill.

F. N. Barrett, New York City, N. Y.

E. W. Margruder, Richmond, Va.

W. M. Allen, Chemist, Raleigh, N. C.

C. B. Williams, Raleigh, N. C.

Scott Bonham, Cincinnati, Ohio.

C. E. Traggardh, Inspector Illinois Food Commission, Rockford, Ill.

Robt. H. Petherbridge, St. Louis, Mo., Old City Hall.

Henry S. Clubb Frankford, Philadelphia, Pa.

John F. Queeny, St. Louis, Mo.

Prof. Chas. E. Caspari, College of Pharmacy, St. Louis.

Rufus L. Weaver, New York City, N. Y.

Wm. L. Hale, Brooklyn, N. Y.

J. E. Halligan, Experiment Station, New Orleans, La.

Edward B. Holland, Experiment Station, Amherst, Mass.

F. C. Weber, Washington, D. C.

L. M. Bliss, Oakland, Cal.

E. Monroe Bailey, New Haven, Conn.

A. G. Richardson, Rochester, N. Y.

W. P. Anderson, Rochester, N. Y.

G. A. Brown, Jr., Chemist, Asbury Park, La. (New Orleans).

J. B. Street, Chemist, New Brunswick, N. J.

Mrs. L. F. Kebler, Washington, D. C.

C. C. McConnell, Clemens College, S. C.

Burton J. Howard, U. S. Dept. of Agriculture.

James L. Anderson, Indianapolis, Ind.

Louis L. Van Styke, Geneva, N. Y.

A. W. Farlinger, Atlanta, Ga.

J. A. LeClere, Washington, D. C.

R. J. Davidson, Chemist, Virginia Experiment Station.

Lucius P. Brown, Analyst, Nashville, Tenn.

J. H. Norton, Station Chemist, Fayetteville, Tenn.

Earl D. Babst, 205 La Salle St., Chicago, Ill.

R. E. Tomlinson, 1101 Home Ins. Bldg., Chicago, Ill.

J. E. Siebel, 1422 Montana St., Chicago, Ill.

B. B. Ross, State Chemist of Alabama, Auburn, Ala.

G. S. Trap, Texas Experiment Station, College Station, Tex.

H. J. Bohn, Pub. "Hotel World," Chicago, Ill.

George Paxton Diehl, Cincinnati, Ohio.

Mrs. Frank L. Hubbard, Inspector Illinois State Food Commission.

E. R. Ridgely, Mulberry, Kans.

L. P. Greene, St. Louis, Mo.

W. W. Wiley, Topeka, Kans.

W. D. Richardson, Swift & Co., Chicago, Ill.

Sebastian Mueller of Heinz & Co., Pittsburgh, Pa.

Wm. W. Smithers, representing the Ass'n of Manufacturers and Distributors of Food Products, Philadelphia, Pa.

Charles M. Ams, representing the Ass'n of Manufacturers and Distributors of Food Products, New York City, N. Y.

John W. Dodson, representing the Ass'n of Manufacturers and Distributors of Food Products, St. Louis, Mo.

D. E. Glidden, LeRoy, N. Y.

D. S. Horan, Little Falls, N. Y.

Geo. W. York, Chicago, Ill.

Percy T. Morgan, representing California Wine Ass'n, San Francisco, Cal.

Vincent L. Price, representing National Confectioners' Association, St. Louis, Mo.

A. C. Fischer, representing Price Flavoring Extract Co., Chicago, Ill.

Edmund W. Taylor, Frankfort, Ky.

G. F. Mason, Heinz & Co., Pittsburg, Pa.

August E. Gans, Chicago, Ill.

F. M. Randall, Ripley, N. Y.

F. D. H. Cobb, Rochester, N. Y.

F. W. Henning, Chicago, Ill.

J. Hungerford Smith, Rochester, N. Y.

The Secretary informs me that he has some letters and telegrams, and if there is no objection they will be read at the present time.

Secretary Allen then read the following communications:

Letters from President Roosevelt, Hon. Alton B. Parker, Hon. James Wilson and Hon. John Hay, regretting their inability to be present at the sessions of the Congress.

Invitations from the Anheuser-Busch Brewing Association to the delegates to visit their plant at St. Louis, Mo.

Invitation from the Georgia State Commission to attend a reception at the Georgia State Building on Wednesday evening.

Invitation from the Governor of the State of New Hampshire and the Mayor of the City of Concord to hold the next annual convention in that city and state.

Communication from E. M. Babbitt, president of the Kentucky Wholesale Liquor Dealers' Association, asking to be allowed a hearing on behalf of their interests.

Communication from various food exhibitors at the exposition requesting the Congress to pass a resolution asking the jury of awards of the Agricultural Department of the exposition to only admit to competition for certain awards of merit such goods as are free from adulteration and labeled truthfully.

On motion of Mr. Jones the matter was referred to the Committee on Resolutions.

On motion of Mr. Allen, the invitation to visit the plant of the Anheuser-Busch Brewing Company on Wednesday afternoon was accepted.

PRESIDENT BAILEY: I am informed that President Francis has another meeting to attend at the Fraternity Temple and has been delayed for some reason, so I think it would be well to take up the regular program and hear from Dr. Carlier, Commissioner General of Belgium.

DR. CARLIER: I will read to you, ladies and gentlemen, the message which has been sent to you from my government.

#### DR. CARLIER OF BELGIUM.

Nous sommes heureux de voir les questions relatives à la falsification des denrées alimentaires réunies aujourd'hui dans le programme d'un congrès spécial, célébré dans un pays où ont été poussées si loin les études concernant cet objet.

Nous avons l'honneur de vous communiquer les documents relatifs à la législation et à la surveillance du commerce des denrées alimentaires en Belgique et, en outre, quelques documents ayant trait aux autres pays.

Le Gouvernement belge suivra avec le plus grand intérêt les travaux du Congrès. Il regrette vivement de ne pouvoir y prendre part dans une mesure en rapport avec l'importance qu'il y attache. Il fait des vœux pour l'entier succès de votre oeuvre.

#### BORDEREAU DES DOCUMENTS COMMUNIQUEES.

##### BELGIQUE.

Loi organique du 4 août 1890.

Lois et règlements spéciaux sur les viandes, les beurres, la saccharine; règlements relatifs aux autres denrées principales.

Règlement organique du service de surveillance (inspection et analyse).

Documents sur la composition normale des principales denrées alimentaires.

Diagramme représentant les résultats du fonctionnement du service de 1896 à 1903 (exemplaires à distribuer).

Bulletin du service: années 1902 et 1903, livraisons de l'année courante.

##### PAYS DIVERS.

Législation concernant le commerce du lait, du beurre, du fromage, du saindoux, etc.

De l'entente internationale concernant la législation et la surveillance du commerce des denrées alimentaires.

De l'unification internationale des méthodes d'analyse des denrées alimentaires.

Au bureau et aux membres du "Pure Food Congress."

Le Gouvernement de Sa Majesté le Roi des Belges applaudit à l'initiative des organisateurs de ce Congrès.

L'utilité de discussions entre savants des différents pays au sujet des mesures à prendre pour

combattre efficacement la fraude dans la fabrication et le commerce des denrées alimentaires a été maintes fois déjà établie à l'occasion de congrès internationaux d'hygiène, de pharmacie, de chimie. Les congrès d'hygiène et de démographie ont institué une commission pour la réalisation d'une entente internationale concernant la législation et la surveillance; les congrès de chimie appliquée ont nommé une commission pour l'unification internationale des méthodes d'analyse.

Le département de l'agriculture de Belgique (Service de santé et hygiène publique) s'est fait un devoir de participer au travail de ces commissions, notamment par le publication de documents, d'études comparatives et de projets de mesures internationales. Il constate que, parmi les documents recueillis, ceux qui ont trait aux Etats Unis de l'Amerique du Nord occupent une très large place; c'est reconnaître que cette nation est une des plus zélées dans la lutte contre la falsification des aliments; c'est rendre hommage à l'activité et à la compétence des Américains qui se sont voués à cette tâche ardue: Wilson, Wiley, Frear, Jenkins, Scovell, Weber, Bigelow, Allen, Ellis, Harrison, Leach, Le Clerc, McGill, Mitchell, Munson, Tolman, Winton et tant d'autres.

To the International Pure Food Congress and Its Members:

The Government of His Majesty, the King of Belgium, desires to express its gratification at the initiation of this congress. The usefulness of discussions between experts from different countries on the subject of the measures necessary to be taken for the purpose of combatting fraud in the preparation and distribution of food and food products has been many times demonstrated on the occasion of international congresses of hygiene, of pharmacy, and of chemistry. The Congress of Hygiene has instituted a commission looking towards the establishment of an international understanding concerning legislation and regulation in these matters. The Congress of Applied Chemistry has named a commission for the international unification of methods of analysis.

The Department of Agriculture of Belgium (Service of Health and Public Hygiene) has taken upon itself the duty of participating in the work of these commissions, notably by the publication of documents and by comparative studies of the projects for international measures. It is ascertained that among the documents received, those which have treated of the United States occupy a very large place. It is also recognized that this nation is one of the most zealous in the struggle against adulteration of foods, and homage should be rendered to the activity and competency of those Americans who have devoted themselves to this arduous task: Messrs. Wilson, Wiley, Frear, Jenkins, Scovell, Weber, Bigelow, Allen, Ellis,

Harrison, Leach, Le Clerc, McGill, Mitchell, Munson, Tolman, Winton, and many others.

We are happy to see the questions relative to the adulteration of foods taken up to-day in the program of a special congress in the country which has gone so far in the studies concerning this subject.

We have the honor of presenting to you various documents relative to legislation and to the regulation of the traffic in food products in Belgium, and also some documents having relation to other countries.

The Belgian government follows with great interest the work of this congress, and regrets very much not having the power to take part in a measure of such great importance, but expresses a wish for the entire success of your work.

#### LIST OF DOCUMENTS COMMUNICATED.

Organic Law of the 4th of August, 1890.

Laws and Special Regulations on Meats, Butter and Sugar, and Regulations Relative to Other Pure Food Products.

Organic Regulation of the Service of Surveillance (Inspection and Analysis).

Documents on the Normal Composition of Pure Foods.

Diagram representing the results of the service from 1896 to 1903, and bulletin of the service for the years 1902 and 1903 and current numbers for the present year.

#### OTHER COUNTRIES.

Legislation Concerning the Commerce in Milk, Butter, Cheese, Lard, etc.

The International Agreement Concerning Legislation and Surveillance of Commerce in Food Products.

The International Unification of Methods of Analysis of Food Products.

I have read to you, gentlemen, exactly the words of the message sent to you by my government. Now I will ask leave to add a few remarks on my own part. I am very glad to have been chosen by my government to be its special representative at this Congress. We attach the greatest importance to the matters which will be submitted to the deliberations of this Congress. We realize as well as you the serious effects often produced by the use of impure and adulterated food, in many cases fatal results being caused by them on account of impure blood and certain diseases, in little children especially. And we must not only insist on our foods being pure, but our drinks as well, for this is a matter of almost as great importance, as so many of them are sold under false labels and are likely to cause dangerous results. You are aware that in all civilized countries the plague of drink is very great, but perhaps the plague of the bad drinks is worse than the plague of drink itself. It is because we are so

anxious to obtain all the knowledge that is possible on this subject that we have come to attend this Congress, composed of so many great men who propose to put an end to these evils, and we thank you for the privilege and assure you that we have the greatest interest in this subject and hope that much good will be accomplished.

SECRETARY ALLEN: The Commissioner General from Austria is present also, and we would be glad to hear from him.

COMMISSIONER VON STIBRAL: The Austrian government takes a very great interest in the proceedings of this Congress, and it would have been glad indeed had it been able to send here a man competent to deal with this subject. It has not been able to do so, but to show its interest it has given me the honor to take part in your proceedings and report upon it. I must say that personally up to this time I have been interested in the question of pure food only as a consumer of food, but I can understand perfectly of what an immense and growing importance this question has come to be, and I know that, as in a great many other departments, it is only an international organization, it is only an understanding between the different nations which can bring about a satisfactory state of things which is necessary for the general health of all nations concerned. I shall follow your proceedings with very great interest. The subject is new to me, but I am sure it will be very interesting to all and I shall go away a wiser and certainly not a sadder man for having taken part in your proceedings.

PRESIDENT BAILEY: I see that Dr. Cordova of Honduras is present. Have you anything that you would like to say at this time?

DR. CORDOVA: I am not ready to say much just now, only that I feel myself very well satisfied to meet so many honorable gentlemen, and very likely I will be able to say something later; but having just arrived this morning I am not prepared with anything.

PRESIDENT BAILEY: I will call upon Mr. Guido Rossati, representing the Italian Ministry of Agriculture, for a few remarks.

MR. ROSSATI: I am very glad to be present at this meeting, in which I see you have so much talent represented, and to know that this country is so much interested in the question of pure food and I agree with the sentiments which have been expressed by my colleagues in regard to the sympathy with which my government follows the pure food movement in the United States. I think the question of pure food is a question that interests all nations, not only one, and I will follow with great interest the discussion of the subject here. If I hear anything new that can lead to an international

understanding for reaching the object and purpose we have in view, I shall be very glad to recommend it for adoption to my country. I thank you very much for the kind invitation to be here and shall reserve discussion for my paper later on.

PRESIDENT BAILEY: We will now hear from Dr. William Berkeley of Porto Rico.

MR. BERKELEY: I want to know whether I should be considered the representative of a foreign government. It would seem that that question has been submitted to a gentleman much more capable than myself of determining that, and the determination of the question has given them some trouble. However, I shall merely repeat what Dr. Cordova of Honduras has said, and that is, that I am not prepared to speak at length as yet, and I can only express my satisfaction at the prospect I have in view of learning so much from the other members of the Congress and I hope it will be an inspiration to me and also of great value to me when I return to my work in Porto Rico. I am very glad to have an opportunity of meeting the other members of the Congress who are interested as I am in this subject and hope to have an opportunity of knowing them more intimately later.

PRESIDENT BAILEY: We have heard from the other nations, now we would like to hear from our own, and I will call upon Dr. H. W. Wiley of Washington.

DR. WILEY: Mr. President, and Ladies and Gentlemen: I am quite certain as to the point raised by Dr. Berkeley; I know I do not represent a foreign country, although the cosmopolitan character of St. Louis at the present time would lead one to believe that at least he was outside of the United States, or that all countries had congregated here, one or the other. It is certainly a pleasure to meet at congresses, as we have done lately, these distinguished representatives from foreign countries. It shows the growing amity of international relations, and the fact that the great problems which affect the prosperity and the welfare of one are the problems which affect the prosperity and welfare of all nations. As the representative from Austro-Hungary has truly said, the proceedings of this congress will be reported to foreign governments and they will follow with interest what is done here in regard to the great question of pure food. It is without doubt one of the most important questions, one of the most urgent questions which can come before the public, that is, its food supply, not only from an economic point of view but also in its relation to the public and especially in its relation to public honesty. And the great work of this congress and similar con-

gresses is to place upon a sure foundation the principles which should guide those who manufacture and deal in foods and those who consume them. It seems to me that this meeting together of the principal nations of the earth to consider these great problems must be of great assistance in reaching some conclusion that will be of benefit to all.

PRESIDENT BAILEY: As President Francis has not yet appeared I will read my address now:

#### ADDRESS OF PRESIDENT BAILEY.

There are times in life when one is awed by the greatness of the occasion. Such is my feeling to-day when I arise to address this, the greatest meeting ever held in the interests of pure food. The convention we are to hold here at this time will mark an epoch in this movement and work. Never before has such a universal interest been manifested nor such a strong effort been made to hasten its progress. The impetus the cause of pure food will receive here will be long felt and long remembered. My heart is brimmed with pleasure to-day as I look into the earnest faces of this large audience. The spectacle fills one with a consciousness of the immense proportions our work is assuming, and of the large interests involved in the same. Yet when we stop to consider the short period this work has been in vogue can we but marvel at its rapid development?

It has been such a short time since the first pure food laws were enacted in this country. Like every new idea, the pure food movement was at first thought to be merely a fad and hailed as a farce. Amid many adverse circumstances it has gradually gained ground and importance through the short lapse of intervening years until to-day the pure food laws and their enforcement is one of the dire necessities of our land and coexistent with our welfare and happiness.

Every cause must have its beginning. This fact is self evident. But what are the inherent properties upon which depend the ultimate success or failure of any cause? It depends wholly upon the fact of whether its object be right or wrong. This is the lesson to be learned from the study of every movement in history. If this be true, what may we expect of the pure food movement? The question as to whether its object be right or wrong is not one of doubt nor conjecture. To paraphrase the famous apothegm of Lincoln, it is a movement of the right by the right and for the right. Therefore, fellow citizens and co-workers, we may look forward to great future development and progress as a matter inevitable. No opposing force can intercept nor hinder it. Our organization henceforth shall stand permanent and powerful for the promotion of good. Its permeating influence will be wide felt and it will attribute much to our general uplifting and betterment.

Heretofore we have met together as representatives of one nation. The scope of our work has been limited to the needs of our own country. One whose interests have not led him to investigate foreign fields hardly knew that erstwhile the same righteous work was being done in lands other than our own. Yet it has been going on in its own quiet manner, gradually growing in importance and effectiveness. Foreign nations have manifested as deep an interest as our own and they have seen fit to send their representatives to meet with us. To-day we meet not as representatives of one nation but of many nations. On behalf of this nation, I wish to bid our guests a hearty welcome and to extend to them the hand of good fellowship. "In union there is strength." This meeting is the first step towards international organization. It will be but a short time until this organization will be complete and the scope of our work will be world wide. Our guests are here to tell us of the food laws, and the conditions which exist in their respective countries, to discuss questions of international importance, and to give us the benefit of their knowledge and experience. I wish them to enter heartily into the spirit of this meeting and to be free to discuss the various problems which confront us. An interchange of ideas will be a benefit to all. We cannot pursue our investigations and experiments to good advantage by ourselves. We profit by the knowledge of others and need their assistance. Let us give vent to our earnestness and join in hearty endeavor to make our meeting one of interest and profit. I trust that our guests will return to their fields of labor better qualified to perform their duties, possessors of new ideas, and filled with inspiration.

The conditions under which this meeting is held are ideal. Never before have they been so nearly perfect nor has such a great opportunity been given for our advancement. The citizens of the state of Missouri and the officials of the Louisiana Purchase Exposition have done all to make our visit instructive and pleasant. The exposition is the greatest of its kind ever held. Its comprehensiveness, magnificence, and beauty have never been surpassed. Our hearts swell with pride as we look upon it. It is a manifestation of the great progress we are making. The simple seeing of the many exhibits and displays is a liberal education in itself. No time, expense, nor patience has been spared in its preparation.

I wish to emphasize the importance of the exhibit of the National Association of State Dairy and Food Departments. The exhibit is the only one of its kind that has ever been placed at a world's fair. Much labor and time have been spent in gathering and preparing it. It is a good one and does justice to the work which it represents. It is an educational feature of the exposi-

tion second to none. The plain, unvarnished facts are given to the public without fear or favor. At this exhibit the consumer will be shown the different values of food products, their chemical analysis, and correct and fictitious labeling. It gives one who sees it an idea of the great amount of sophistication in food products. I doubt if some of the sins of our manufactures will be shown up more plainly on the day of judgment than they are at this exhibit.

Also let me call your attention to the exhibits of the various manufactures of food products. They have been carefully arranged and the study of them gives a thorough insight into the latest methods of the preparation of foods, many of which are the result of expensive and patient research carried on by the manufacturer. We not only see the finished food products, but also the actual processes by which they are made. The machinery is running, the men are busily at work, and the finish product turned out as is done in the every day operation of the factory.

Worthy of mention also are all the exhibits in the Department of Agriculture. They evince the great strides which have been made in agricultural progress. From them we may see and learn much that will better prepare us to administer to the needs of the farmer.

Amid these mighty buildings and great displays let us not lose sight, fellow citizens, of the great event it all commemorates. Let us not forget that masterly stroke in American statesmanship performed by Thomas Jefferson when he made the famous Louisiana purchase. His far seeing eye beheld the immense possibilities of the then small republic. The Louisiana purchase is a great landmark, the western expanse of this nation. It alone would stand as a fitting memorial to the great man who consummated it. It gives our hearts a thrill of patriotism and national devotion when we see the rapid growth and development our country has made.

Pardon me for a slight divergence, for I cannot resist the temptation at this time to speak of another great exposition soon to be held in the fairest city in the grandest state in this Union, which is to commemorate the acquisition of other territory upon the American continent, and an event in the history of this republic as important to our national development, progress, commercial welfare, and happiness as the Louisiana purchase itself. I refer to the Lewis and Clark Fair to be held in the city of Portland and state of Oregon, beginning in May, 1905. This vast domain embraced within what was known as the "Oregon Country" was secured to us by the far seeing statesmanship of that same good and wise President who added to the public domain of this nation that vast tract known as the Louisiana purchase, then a wilderness, but now covered with

prosperous cities and farms, and peopled with happy and patriotic sons of America. But the credit for the acquisition of the "Oregon Country" cannot be given to Thomas Jefferson alone, for there were two brave, patriotic, and God fearing men to whom even greater credit is due. The names of Merriweather Lewis and John Clark are fixed stars which will ever shine in the firmament of American luminaries. Little did they themselves dream how great would be the wonderful benefits to this nation of their perilous journey amidst savage hordes, across burning plains and mighty swollen rivers, over the eternal snows of mountain tops, and through the silent forests, "where rolls the Oregon and hears no sound save its own dashings," to the shining sands along the shores of the far distant Pacific. Long since their life work has been ended, yet the mighty work of western development, which they began, continues. They secured to this nation a vast empire, which is in truth a veritable land of "milk and honey," a land where honest industry thrives as nowhere else on earth; "the land of the Columbia River salmon and big red apples," the land of lofty snow capped mountains, stored with untold mineral riches; of broad rivers, the mighty highways for the commerce of a prosperous and happy people; of fertile valleys and vast, deep silent forests; of rippling brooks and smiling skies.

We, the American people, are their beneficiaries. Their great life work is to be commemorated by a grateful people at Portland, Oregon, in 1905.

On behalf of the people of Oregon and the great northwest, I extend to you all a cordial welcome to visit the Lewis and Clark Exposition. I bid you come and see for yourselves the mighty wonders of that favored land.

The program for the convention is a most timely one. Many enthusiastic men from foreign nations are here to address us. We may expect to learn much from them. They realize that they are among Yankees and all they have to do is to tell us a thing once and we know it for all time. Commissioners from the various states are here as zealous as ever and ready to tell us the results of another year's labor and toil. Examples of persistence as they are, we may expect much from their tireless efforts. Those earnest workers, our chemists, are here to tell us of their investigations and researches. The work of the chemist is next to the Christian religion in making manufacturers honest. They are true reformers. Many manufacturers are here to inform us of their methods and to co-operate with us in our work. Prominent legislators are with us to discuss legislative reforms. The officials and chemists of the Department of Agriculture are also here to aid us. Their work is indispensable. With all this to listen to and participate in, we ought to gain much from this meeting. The program, I dare say, has never had an equal.

The functions of our state dairy and food commissions are three fold.

First—To protect the ignorant consumer from injury and fraud.

Second—To foster and protect the industries of our states.

Third—To put competing manufacturers upon an equal basis.

In order to fulfill these functions, laws and their rigid enforcement are necessary. We have in nearly all of our states laws which fix standards and regulate the various matters and things relative to the food and dairy commission. As might be supposed, the laws of the different states greatly differ. This is of much annoyance to the manufacturer, because the sale of goods may be lawful in one state and not in another. This we have tried in the past to remedy by securing the enactment of a national pure food law which would give a standard for all. You all know the history of our attempts to secure the passage of a national pure food law. I shall not take time to relate it now since this matter is to be taken up and discussed later by men who can handle it much more ably than myself. But let me urge upon you the need, the propriety, and the nature of such a law. However, I am constrained to call your attention to the fact that we are upon the eve of a national pure food law, as on April 28 of this present year Senator Heyburn of Idaho, chairman of the Committee on Manufactures, served notice on the Senate that he would on the 8th day of December next, immediately after the opening of the morning session on the first day of Congress, ask the Senate of the United States to take up for consideration the Bill H. R. (6295); and in this connection I think it is wise, expedient, and proper for this convention and Congress to pass resolutions or take such other action as will assist Senator Heyburn in his noble efforts.

The laws of the various states, while assuming to accomplish the same object, have a diversity of statement and character which in the end causes a serious embarrassment to the legitimate food manufacturing interests of the country. Goods which are lawful in one state are not in another. Commissioners and chemists differ as to what standards should be upheld. Again, when a commissioner finds adulterated articles being sold, he often learns upon investigation that the manufacturer of the goods in question resides in another state, and he is forced to stop at the boundary line of his own state and grit his teeth in rage and disappointment because of his inability to punish the guilty. To remedy these existing evils there is, so far as I can see, but one remedy, and that is the enactment of a national pure food law regulating interstate commerce and fixing standards for food products. The passing of such a law is a

matter of no small consequence. Its power and scope will greatly influence an annual output of food products amounting to over six billion dollars. It will affect the business of every manufacturer, wholesaler, grocer, and home in our land. It will fix standards for all the various food products. The standards will be definitely and explicitly explained so that no debatable questions as to their meaning may arise. In framing this law the rights and interests of the manufacturers have been considered as well as those of the food commissioner. The manufacture as well as the sale of goods will be regulated. By such a concentration of power in a national law the great mass of food adulteration will be prohibited. The boundaries of our states will cease to be barriers for the protection of fraud and dishonesty. The standard of our food products will be raised and our reputation lifted in the markets of the world. The law is specific. A definite and liberal appropriation will be needed to provide for the executive force and ample machinery to enforce the law. The men employed should be active men of affairs and experts in their lines of work.

Although our past efforts have been futile so far as national legislation is concerned, we have, at the same time, accomplished much. Publicity has been given our cause. The people have been led to see its importance and to demand it. Prominent legislators have given much time and study to it. The honest manufacturers have become more and more closely allied with our work. Let us not be disheartened in our failures, but let us do our utmost to secure the desired legislation at the coming session of Congress.

I cannot refrain from saying a few words relative to the large dairy industry of this country. We are prone to consider the dairy industry a small thing and neglect it. When we take account of the great factors in the business world, I shall not give you a long list of statistics, yet I wish to state a few facts. The dairyman stands as a representative of the largest single line of agriculture save one, that of corn. His product, which is valued at \$590,000,000, is greater than the annual value of hogs sold in this country; it is greater than all the hay and forage; it is greater than all the beef cattle slaughtered; it is greater than all the wheat produced; it is greater in value than all the eggs and poultry; and it has a value almost double that of the oats, sheep, barley, rye, rice, and buckwheat raised in the United States. Great improvements have been made in all the departments of this industry. The milk supply of our cities has gained much in quality. It is more carefully handled and the dairies which furnish it are all in a more sanitary condition. The condensed milk product is increasing as well as that of butter and cheese. The farmer by pursuing proper methods and a scientific study of diversi-

fied farming is realizing a greater profit from the capital invested. The American farmer is the true business barometer of our nation; when he prospers, all others prosper.

Whatever we may do to foster the dairy industry and aid the farmer will be of benefit to all.

The pure food movement has been of great educational value. It has been well said: "Tell me what a people eat and I will tell you what they are." The pure food agitation which has been going on has led the people to become interested in the subject and see its importance. The publishing of different state reports and bulletins containing the chemical analyses which show the adulteration and true value of the different food products, also the reports of our conventions, containing as they do besides the proceedings the food laws of the states and the United States, also the Supreme Court decisions thereon, makes it easier for the commissioner to ascertain the value and the character of his case and greatly aids the public to choose that which is genuine. The people to-day demand a better quality of foods than ever before. They know that by purchasing the good they are taking no chances regarding their health and are receiving greater value for the money expended. Therefore, publicity is one of the great remedies in pure food work.

We owe our earnest thanks to the scientists who have done so much research work. The dietetic experiments, showing the value and digestibility of foods and the action of preservatives upon the human system and explaining many other doubtful questions, are invaluable. The new methods of chemical analysis which are being worked out will enable us to examine foods more closely and minutely and will increase the accuracy of our work. As a rule, the man who pursues scientific research receives but a scanty remuneration for his work. Highest commendation and praise is due the man who is willing to spend his life and work for the advancement of knowledge and the betterment of his fellow men.

With gratitude I wish to acknowledge the excellent work and assistance rendered me during the past year by the secretary and the executive committee. They have exerted themselves to the utmost in making this meeting an unqualified success.

Throughout my address, ladies and gentlemen, I have tried to speak in a general way and keep away from detail. And now I wish to give all who are associated in this work my best wishes and fondest hopes for success. May God speed us in the tasks which we have set about to accomplish. And after we have listened to the splendid program prepared, may we return to our homes ready to join in a work which shall be world

wide in its magnitude and the ideal of which shall be as high as human aspiration.

Congress adjourned to meet at 10 o'clock a. m., Sept. 27th.

September 27th, 1904, 10 o'clock a. m.

Congress met pursuant to adjournment.

CHAIRMAN BAILEY: The first thing which will be taken up this morning will be the appointment of the committees, which are as follows:

COMMITTEE TO REPORT RESOLUTION ON ANTISEPTICS AND COLOR: H. W. Wiley, J. H. Shepard, Sebastian Mueller, V. L. Price, E. F. Ladd, Julius Hortvet and William Berkeley.

COMMITTEE TO REPORT RESOLUTION ON LEGISLATION: J. Q. Emery, A. H. Jones, A. E. Leach, Horace Ankeny, J. D. Miller, R. O. Eaton, A. W. Farlinger and John A. Bliss.

COMMITTEE TO REPORT RESOLUTION ON INTERSTATE AND INTERNATIONAL STANDARDS: M. A. Scovell, E. N. Eaton, H. W. Wiley, H. E. Barnard, R. G. Evans, C. P. Sherwood, Dr. Cordova, Albert von Stibral.

COMMITTEE TO REPORT RESOLUTION ON ALCOHOLIC BEVERAGES: J. B. Noble, H. W. Wiley, M. A. Scovell, Guido Rossati, J. O. LaBach, A. H. Jones and J. H. Shepard.

COMMITTEE TO REPORT RESOLUTION ON BAKING POWDER: Horace Ankeny, W. W. P. McConnell, M. A. Scovell, A. C. Morrison, J. W. Mallet, Moroni Heiner, E. A. McDonald, A. L. Knisley.

COMMITTEE TO REPORT RESOLUTION ON FUTURE INTERNATIONAL CONFERENCE: Guido Rossati, Commissioner General Carlier, Albert von Stibral, Dr. Cordova, Benj. Vidaurre, Dr. Cuto and R. M. Allen.

COMMITTEE TO REPORT RESOLUTION ON DRUG ADULTERATIONS: A. E. Leach, Herman Harms, Theodore Wetterstroehm, B. H. Warren, E. N. Eaton, Julius Hortvet, D. C. Vaughn.

COMMITTEE TO REPORT RESOLUTION TO CONGRESS: A. H. Jones, A. McPherson, Mary L. Wright, E. A. McDonald and N. B. Critchfield.

The General Resolution Committee is composed of the chairman of each of these committees and they are to get their committee together and report to this convention.

The first thing this morning will be an address by one who, as you all know, has taken as much interest in the subject of food adulter-

ations as any man in the United States. When we go back into the history of this problem of pure food, I think we will find that there are few who have been as active as the commissioner from Illinois, whom I now present to you, Hon. A. H. Jones.

#### ADDRESS OF HON. A. H. JONES.

Mr. President, Hon. David R. Francis, President of the exposition, and gentlemen of the convention: You all know that our chairman wields some large and handsome bouquets, and I see I am the recipient of one of them. I take pleasure in being here with you to-day at this, our eighth annual meeting. I assure you it is a great pleasure to be here and to see how this organization has grown in the five years that I have been connected with it.

On behalf of the International Food Congress and the National Association of State Dairy and Food Departments we return our hearty and sincere thanks to you for the generous welcome extended, as well as the kind words spoken; also for the words of cheer, as well as sympathy for our cause.

We assure you that we are happy to come to this great Louisiana Purchase Exposition, held in commemoration of the acquisition of an empire.

A person must be exalted at such a moment as this, the inauguration of the greatest educational force that has ever made its impress on humanity, the dedication of the world's wisdom in this the morning of the twentieth century to the countless ages.

It is fit and proper that the International Pure Food Congress and the eighth annual convention of the National Association of State Dairy and Food Departments should be held here, where the exhibits of every country and every people, classified as they are in a manner unequalled for clear and competitive comparison, and by a system and in an order that records the developments of man and his accomplishments, as well as bear testimony to the advancement of civilization and show that their arrangement is the result of thoughtful experience, and is for the edification of all who desire to learn.

We assure you that we are very glad to come to this great exposition to hold our annual meeting and it is accordingly to-day my pleasant duty to thank the officers and managers for the wide hospitality offered by them to the representatives of "pure food" of all the nations of the civilized world.

I am quite sure that I interpret the sentiment not only of my co-workers, the commissioners of the various states of the Union and their assistants, and the manufacturers, jobbers, and distributors of the various food products, and all who are interested in "pure food" work, but also the

representatives of all the foreign governments represented here.

The rare good fortune of this country is that it has always been able to find, on all occasions, men fitted for the tasks which they have been called upon to perform.

The American nation, always progressive and so full of noble initiative, has always known how to discover the men whom the need of the hour demands.

It is, therefore, with pleasure that I accept the grateful task, the pleasure and value of which I most fully appreciate, to publicly pay my tribute, on behalf of our Food Congress and of all food interests, to these men whose names are upon all lips, Hon. David R. Francis, president of this great exposition; and as has been so well said, "In no country, under no government, by no people on earth could this marvelous result have been achieved save by the American people under the freedom of their institutions, the inspiration of liberty, and the influence of Christian civilization."

When the mind runs back over the past one hundred years and pictures out, as it were, a mere trading post here—here no city of St. Louis, here then the country all around a wilderness, now St. Louis has a population of seven hundred thousand, the fourth city in rank and the commercial center of the United States.

Then when we consider that this Louisiana purchase embraced a territory of more than a million square miles in area, extending from the British possessions on the north to the Gulf of Mexico on the south, and from the banks of the Mississippi on the east to the snow clad crests of the Rocky Mountains on the west, with a population then of a hundred thousand and now of fifteen millions, and great as has been this increase in population still greater has been its growth in resources and productions. When we consider all this we can more fully appreciate what this exposition means.

Here then, under autumnal skies, in the midst of this wonderful exposition, surrounded by a delightful, historic, and literary atmosphere, in the presence of the great, noble, and generous spirits of this charming city, and as members of this great International Food Congress we come to talk over and plan for the welfare of our fellow men.

You will see from our program that the Food Congress is, as the cause it represents, universal. It speaks for every nation and every tongue upon the face of the globe, for from the "cradle to the grave" every human being is more interested in the cause of "pure food" than any other.

We believe that this International Food Congress, and the cause it represents, is engaging the thought and the attention of the people of the civilized world as never before.

There are imitations, frauds, and adulterations everywhere. Food articles are mixed up with substances that affect purity and lower their quality and strength; inferior substances are substituted for the genuine article; valuable ingredients are extracted from the real products; true articles are imitated and sold under another name; and ingredients are added which are poisonous or injurious to health.

The press is to-day preaching the gospel of "pure food," state and national and international surveillance of food products.

We are trying to impress upon the people that what a man, a community, a nation can do, think, suffer, imagine, or achieve depends on what it eats; that the direct agency upon which all these conditions depend, and through which these forces operate, is food; that we can give the philosopher a handful of soil, the mean annual temperature and rainfall, and his analysis would enable him to predict with absolute certainty not only the characteristics of the inhabitants of the country but the quality of its food products.

We champion the doctrine that "pure food" and "pure drink" are not only moral obligations, resting on all governments, but a legal obligation that should be vigorously enforced, not only by statutory laws but by their rigid enforcement.

We come here for the free discussion of these laws and the methods of enforcing them, as well as a unification of all laws pertaining to foods and drink.

We are seeking an interchange of thought in regard not only to the laws of the different states in the Union and memorializing the Congress of the United States to place on the statute books of the nation a "national pure food law," with full power to make rulings and labels, as well as authority to enforce same, but we are also desirous of having an international treaty or law by which all food products for international commerce will be required to be not only properly labeled, stamped, or branded, so as to show just what the article of food is, along with the true name and address of the manufacturer or packer, but to secure uniformity of laws, rulings, and labels among the different nations of the world.

If we look back along the history of the past hundred years, it is very easy to see a striking tendency toward unification in the history of the nations of the earth. They have come together even physically.

The oceans that once separated them, so far as trade and commerce are concerned, separate them no longer—steam has abridged them. The oceans that once forbade under communication forbid it no longer. The cable runs under the ocean and we stand in St. Louis and talk to the people of the civilized world.

Thus, physically, the globe has grown smaller;

Jules Verne's famous romance, so wildly fantastic only a few years ago, "Around the World in Eighty Days," has become a commonplace of travel.

Along with this physical conjunction of separated nations has gone the breaking down of commercial barriers, and the opening of commercial highways. On this continent we have forty-five independent states, not separated by a single custom house or barrier of any kind. Gradually these states, like the nations of the world, are coming to an interchange of their products one with another, community with community, with the same freedom that cities interchange with cities and families with families. The state and national unification has been even more remarkable.

This unification—commercial, national, and political—has been accompanied by a growth of unity in the manufacture of and properly labeling as well as standards for food products.

Mr. President, the time is not far distant, in the past when every nation had its own system of manufacturing food products. There was no unity of action between the nations nor unification of the laws pertaining to food products.

All these forces—material, commercial, industrial, and national—find their natural and proper exponent in such gatherings as this great International Food Congress and similar gatherings.

These are signs and symbols of the truth that we are growing together, that the world is getting itself organized.

What are we to do to promote this international brotherhood? First, we are to set forth clearly and distinctly our views; we are to formulate laws, rulings, and standards, and present them to the congress of nations.

It is with pleasure I state that in his annual reports Secretary Wilson of the Department of Agriculture has strongly urged Congress to pass a comprehensive "pure food law" and that the chemistry forces, under the able management and leadership of our highly esteemed Dr. Wiley of that department, have worked in co-operation with our "Pure Food Congress," the National Association of State Dairy and Food Departments, and other similar organizations.

It is to be greatly regretted that Congress failed to pass a "pure food law" at the last session.

We must have a comprehensive, practical, and effective law to prevent the sale or manufacture of impure or adulterated food products.

The members of this "Food Congress" and of the National Association of Dairy and Food Departments fully understand that "pure food legislation" could not be secured until a public sentiment was created in its favor.

Accordingly annual meetings have been held, resolutions adopted, letters written to members of

Congress, committees have waited upon committees of the House and Senate, and articles published in the press of the country, and streams of information formed to pour into the ocean of public sentiment that swells and rolls and revolves around our political globe, carrying conviction, congresses, and governments on its resistless bosom.

Because that work has been done so perfectly a national pure food law is now on the calendar of the Senate of the United States, and this proposed national law, having passed the House, is now in charge of Hon. W. B. Heyburn, United States Senator from the state of Idaho and chairman of the Committee on Manufactures, to which this proposed national food law has been assigned; and it is our firm belief that under his able management the United States Senate will see the necessity of concurring with the House of Representatives and enacting it into a law.

The bill as now pending in the Senate, while not perfect, is a good working measure. The Committee on Manufactures, to which it was referred, gave the measure great consideration and made many amendments, one of which embraces within its provisions drugs.

I regard this as a very unfortunate and unwise addition to the bill, as it will naturally array all dealers in proprietary medicines and adulterated drugs against it. The question of drug regulation should be put in a department to itself, under a "national pharmacy law," and not injected into this bill and thus defeat "pure food legislation."

Along this line a novel exhibit of food adulterations as well as a "pure food exhibit" has been installed in the Department of Agriculture. Here is shown not only "pure food" in its most wholesome form but also in its most unwholesome and fraudulent form.

The display, which includes exhibits from the various state food departments, shows the form and manner of these food adulterations and fraudulent deceits, together with samples of same, along with the various tests that have been made. This exhibit also shows the comparative nutritive value of foods.

I take pleasure in calling attention to this novel exhibition, as it is educational and along the lines laid out by the Louisiana Purchase Exposition to enlighten the people as to "what to eat," and that this great exposition will put the seal of condemnation upon any food product that has been condemned by the State Food Commission or by the United States Department of Agriculture.

In conclusion, gentlemen, please allow me to again return the thanks of the members of this "Food Congress" to you for your generous welcome.

The fair is immense and wonderful—no description in words can give an adequate idea of the

vastness of the exhibit that is to be seen at Forest Park.

The character of the ground has been artistically taken advantage of, in allotting the spaces for buildings and outdoor display, with the result that the eye does not tire of the view from any quarter, but finds new delight in each unfolding scene.

The wondrous buildings in Forest Park rose like the city of a dream. He who entered these seemingly enchanted grounds and saw the morning sunlight gleam upon the stately columns and the marble walls of the magic city might well recall—and I say it reverently—the apocalyptic vision "and I, John, saw the holy city, the new Jerusalem, coming down from God, out of heaven, prepared as a bride adorned for her husband."

This great exposition is the "World's Fair"—fair because no other nation turns so sweet a face to the kiss of the morning sun; the "World's Fair" because here is the gathering of all the tribes and peoples and nations of the earth, and everything good or bad in the world's history finds within our borders and in our life its equivalent or counterpart.

CHAIRMAN BAILEY: We will now commence with the program as of Tuesday morning, as Mr. Jones should have come yesterday, and we will now listen to an address from one who has done more to make this International Congress a success than any man in the United States, and I want to say right now that even if this national association should live a hundred years and have a hundred secretaries, we will never have a better one than the present one, because they don't make them. I now want to introduce to you Mr. R. M. Allen, our secretary.

MR. ALLEN: You wrote me something to that effect a few months ago and I answered that the convention which J. W. Bailey called to Oregon and the convention which W. W. F. McConnell called to St. Paul were the two meetings which made this congress a possibility, and which will make it a success.

#### THE INTERNATIONAL PURE FOOD CONGRESS.

R. M. ALLEN, SECRETARY.

The nations have held international conferences to fix uniform weights and measures. This meeting is called to have the articles of food and drink which go into the gallons and pounds measure up to uniform standards of purity.

International conferences have been held to have articles of commerce so labeled that one man's goods will not infringe upon the trade reputation of another's. This meeting is called to have the law of the honest label extended to all terms which indicate the purity, quality or name of any substance intended for human consumption.

Just as money would become debased if counterfeiting were not a felony; just as weights and measures would become frauds if law did not compel the balance to swing honestly; even so have the substances we eat and drink, put up under a general license to adulterate and label as competition will permit, become debased, adulterated and fraudulently labeled.

There have been international meetings to consider the problems connected with the growing of food materials. This meeting has been called to consider the problems connected with the packing, preservation, and wholesale distribution of the foods made out of the materials—the problems which attend when the kitchen for one family has become a factory for many, and the course of distribution no longer from cellar to the dining room above it, or from the smokehouse or the private dairy; but from the factory into the temperatures of different climates, and where all sentiments of purity have been sacrificed to margins of profit.

International commissions have determined uniform methods for detecting adulterations and measuring the quality of food substances. It is the purpose of this meeting to recommend the establishment of uniform standards and to put the conclusive findings of thousands of analyses into effect in the form of wise laws, uniformly and justly enforced, with a uniform policy for their enforcement. What shall we do with colors, and antiseptics, and how shall we stop false labeling? in short, are the questions. For this purpose we have called those who examine foods, those who make foods, and those who have to do with food laws into conference.

The congress was suggested by the success of the seventh annual meeting of food commissioners in St. Paul last year. For the first time manufacturers were invited to take part in the discussions of the questions presented, and the interchange of ideas and experiences was of so much profit to both sides and to the pure food work that it was determined to call a similar meeting in St. Louis and to invite all states, nations, and food interests to take part. Accordingly the secretary was authorized by the Executive Committee in Washington, November 19, 1903, to begin the organization of such a meeting.

In this work I visited England, Germany, and France with letters from the United States Department of Agriculture and the National Association of State Dairy and Food Departments. The committee has asked me to give a report of what I learned about food control work in Europe. The time limit for the large amount of work planned for the Congress demands that this report be made brief, and I will ask privilege to extend a more complete report in the journal of proceedings of the Congress.

I regret that I could not visit Belgium, Holland,

Switzerland and Denmark. Their departments have done good work in detecting food adulterants and controlling them. Perhaps in these countries the questions of commercial interests do not affect the enactment and enforcement of food laws as they do in France and Germany and in England and America. I should also like to have seen to what extent Italy's excellent health code is being enforced.

The three capitals, London, Berlin and Paris, were finally chosen.

The information sought was:

What is the government policy toward antiseptics and artificial color?

What is the opinion of the government scientists concerning the effect of antiseptics on the human system?

Through what machinery does the government control the adulteration and mis-branding of foods?

To what extent does public sentiment demand and support the enforcement of food control laws?

This information was sought in the laboratory and in the court records. Everywhere it was obvious that the adulteration of milk with formaldehyde and similar violations were promptly punished, but the authorities complained of a lack of public support towards the enforcement of the laws to a further extent, and also the lack of sympathy from the press by means of which the facts are conveyed to all the people. Everywhere it was recognized that honest publicity alone has power to cope with the moneyed interests entrenched in the adulteration and mis-branding of food substances.

Undoubtedly from every government in the civilized world the decree is going forth against the use of all antiseptics in all foods. This decree is not backed entirely by experiments on men and animals, but it is backed by the fact that on account of the nature of the antiseptics used the people will not eat a food containing an antiseptic if they know it. This prohibition will therefore come about finally by the label in competition with a similar article of food containing no antiseptic. The decree has already gone forth that synthetic substances cannot be sold under the names and terms by means of which the people select genuine food products, and the decree will go even further and say as the Minnesota court has already said: "No man has the right to keep secret the composition of a substance which he sells as an article for human consumption." It is my honest opinion that the commercial interests should prepare to meet the conditions which the restriction of chemical preservatives and truthful labels will impose.

#### ENGLAND.

The American Ambassador in London referred me to the British government Board of Agri-

culture, and the board to Mr. R. F. Crawford, who at that time had charge of the enforcement of the food and drugs act of 1898. I am greatly indebted to Mr. Crawford for the extended information given me of the work in Great Britain. He referred me by turn to Dr. Thos. Edward Thorpe, principal of the Government laboratory, a laboratory similar in the scope of its work to the United States Bureau of Chemistry. I also called upon Colonel Charles E. Cassal, one of the British public analysts and the editor of the British Food Journal, a man who has been interested in international commissions for the control of adulterations among European states and who is endeavoring to establish the analytical control idea in England.

From these gentlemen I learned that the inspection and analysis of foods in England is carried on by the public analysts appointed by the local boroughs and townships, who report their findings to the local authorities for prosecution under the food and drugs act, which is the same for the United Kingdom. The Board of Agriculture inspects to see that the local authorities make the proper provision for the law's enforcement and to see that the work is carried out when provided for, pointing out to the public analysts violations that should receive examination, and causing samples to be analyzed at the borough's expense when the case requires such action.

Dr. Thorpe's laboratory advises the government boards, the Board of Agriculture, the Board of Customs, the Board of Inland Revenue, and other boards and appointed commissions on all matters requiring a laboratory investigation. This laboratory acts as a referee in disputed analyses between the public analysts and the defendant who may be prosecuted for selling adulterated food, and it is the policy of the courts to take the opinion of the government laboratory as final.

A royal commission has inquired into the use of antiseptics and colors, and this commission's report has influenced the food control work in other countries, but Parliament has done nothing yet to make laws out of the commission's recommendations. Another commission inquired into the arsenic epidemic which swept England in 1900, and traced the source to beer made by British brewers from impure glucose. A recent commission has conferred with the dairy trade for the purpose of recommending standards for milk and dairy products. There are no standards for food products in Great Britain, except low standards for butter and milk, and the enforcement of food laws has been largely confined to these products and to meat markets.

The food control problem in the Island is different to that in other countries. England imports much of her food. The enforcement of law must, therefore, prosecute the retailer for an adultera-

tion put up in another country and admitted through the ports. Naturally, there is little disposition on the part of the local authorities, as was pointed out by Col. Cassal, to prosecute their fellow-townsmen for any, except the most injurious, violations. And, too, the British statesmen are cautious with the suggestion to raise high standards at the ports, fearing that such standards might affect prices.

Col. Cassal told me that Scotland has a food control association similar to the American organization and that more interest was given the work in Scotland than in England.

One thing is noticeable in Great Britain; when the Britisher wants to dispose of an evil he has a remedy at hand in some old statute, or finds a remedy at common law. Boric acid has been considered injurious to health by some of the courts and is restricted in these localities without specific regulations. The Irish linen makers complained last winter against a "linen mesh underwear," which proved to be a mixture, half and half, of linen and cotton, and they found a remedy under an old act forbidding, generally, "the adulteration of agricultural products."

#### GERMANY.

Germany is seriously and intelligently studying her industrial problems, and is co-operating with her industries to the end that her products may have the stamp of merit to hold their own in the trade wars of any market. There are stations, jointly supported by the government and brewers, to study the improvement of German beers. Similar stations study grape culture and wine-making, and others look into culture for cheese and the improvement of all of the empire's food. The Emperor's world-respected laboratories are examining into all of the food problems in accord with the industrial policy of the empire, to the end that good foods may not only be a matter of sentiment, but a matter of profit.

Ambassador White gave me a letter to Dr. Powell, chief of the government laboratory at Berlin, and Doctors Smith and Carp, members of Dr. Powell's staff, gave me information concerning the empire's food control work.

German laws prohibit the use of antiseptics in meat and meat products, and the courts rule against antiseptics generally in other foods. When these restrictions went into effect the American people looked upon it as a discrimination against American meats. This was an error. The same restrictions confront meat and dairy products from over the frontier as well as through the ports, and the restrictions are also in effect throughout the empire. It may be that it is easier for Germany to prohibit antiseptics than America; for example, on account of the favorable climate, care in manufacture and prepara-

tion for market, and the extensive use of culture and ripening processes, the methods which give us the German beer and cheese and sausages and kroust. The swarms of bacteria which come to destroy as soon as life is taken from the animal or fruit the Germans counteract with another swarm, which ripen, preserve and give the characteristic flavor to German foods. It may be, too, that Germany finds it profitable to protect her meat interests by restricting antiseptics, since it is easier for the home industries to furnish their products for the markets without them than it is for foreign competitors, especially when aided by the German climate and German methods of preservation.

The laws are uniform throughout the empire. They are enforced by the local police and the examinations are made by the public analysts of the townships, except in Bavaria and Saxony, where the work is done by the state laboratories. The imperial laboratory, like the government laboratory in England, advises the imperial boards on matters requiring scientific investigation. It recommends standards for food laws, makes experiments with colors and antiseptics to determine their effect on the human system and collaborates the work of other laboratories and German scientists in matters relating to adulterations. It was on the experiments of this laboratory with animals, and on a man, finally, that the restrictions against preserving agents were enacted.

The Germans are not slow to put their knowledge into effect. The records of thousands of analyses and volumes of court decisions affecting food control work show that they are enforcing these laws. They have seen that some of the food adulteration results from honest problems, and the empire is co-operating with the food industries in a study of these problems. The laws, however, are severe on all frauds, and my attention was called last winter to a case where a manufacturer had been sent to prison for two years for mixing glucose and honey and selling the mixture as "pure honey."

German laws require saccharin to be made in a government factory. Its use is prohibited in all foods, and its sale is restricted to a physician's prescription. It is charged that the empire does this to protect its sugar industry. The charge, however, comes from those who find it profitable to use saccharin as a substitute for sugar, and who have not as yet evidence to dispute the German claim that the use of saccharin in foods is injurious to health.

#### FRANCE.

"Les Francais font du vin avec tout, et quelque fois avec des raisins." The French make wine out of anything, sometimes grapes," said my guide, when I told him my business in Paris.

The American embassy in France referred me to the Laboratory of the City of Paris for information concerning the French work. The food and water supply of the city is examined in this laboratory. Dr. R. Cochon, in charge, told me that antiseptics were prohibited in all foods, and colors in every food except copper in peas and cochineal in candy and other harmless colors in cordials. They find some difficulty, however, in enforcing these regulations. This laboratory has been analyzing French wines and the official informed me that 80 per cent of the champagnes and 60 per cent of wines are found to be adulterated or misbranded. This statement was made on my return and has been challenged by the journals of the French wine interests, and, I understand, has been refuted by some of the French authorities. I do not make the statement to embarrass the importation of wines from France, for no adulterated wines can pass our ports, and any wine which has been admitted and not tampered with afterward can be relied on. Dr. Wiley found, when he began the inspection of imports two years ago, that the American people had been "drinking only labels." I bring this point up only for the purpose of showing the extent of adulteration in this product. The situation is equally as bad for American and Scotch whiskies.

The application of chemistry to practical food problems is more marked in Germany than in France. The French have done leading work in physiological chemistry and the chemistry of medicines, and in discoveries and demonstrating theories, but the application of principles to practical conditions has told in the German's intelligent control of food adulterations, and the enforcement of law has been more consistent and rigid in Germany than in France. In England the situation is different from that in both countries. England imports most of her own foods and her merchants are engaged in trading rather than in making food articles. England, therefore, has little control over the original purity of the product, and she has many questions to settle before she can make and enforce strict regulations.

Oleomargarine, known in Europe as "margarine," has been the subject of much legislation in all of the European states. This product was invented by a Frenchman, and the dairy interests have been fighting its sale as butter ever since. Restrictions in France, England, Denmark, Belgium and Holland require sesame oil to be mixed with it, so the chemists can detect it if mixed with butter in proportions below 20 per cent, and also require all tubs, jars and other packages containing it to be labeled, in large letters, "Margarine." Some of the laws require this label to be printed on a red band pasted around the package.

## THE UNITED STATES.

All of the European departments recognize the work that has been done in America. The United States Bureau of Chemistry, the state analysts and some of the experiment stations have covered a wider field of adulterations and have a more intimate acquaintance with the general market conditions of food than any other body of workers, while the American state food commissioner is foremost in the practical enforcement of the laws. Dr. Wiley has thrown the influence of his bureau toward the detection of food adulterations during the last fifteen years and published the first conclusive reports on the extent of adulteration. He has begun experiments to determine the effects of antiseptics on the human system, on a much more extended scale than other investigators. Twelve men are under experiment—a task of analytical and record data of such magnitude that it is fortunate we have a Dr. Wiley to undertake it. With Dr. Wiley, four other executives in scientific work, Scovell, Webber and Frear are weighing the evidence from careful referees and thousands of analyses, together with the conflicting testimony of the interests affected, and are formulating standards which the American food commissioners, the pioneers in the enforcement of food laws, are forcing into the pounds and quarts of American food. These standards, Dr. Smith of Germany told me, are higher than the standards put into effect by Germany, but he regards them as of the high authority, on account of the reputation of the men who have the work in charge, and the vast amount of analytical work and hearings from the trade considered in formulating them.

## COLOR AND ANTISEPTICS.

The policy of the departments I visited is drifting toward the total prohibition of colors in foods wherever there is a possibility of imitation or concealing inferiority; and the restriction of antiseptics to extreme needs, and in all instances a plain label stating that an antiseptic is used. It is evident that the American state analysts and the United States Bureau of Chemistry have done more work in showing the inferiorities which colors cover than in any other country. It is true that the making of colors is a German industry, but their work has been directed toward making the best colors, while the American scientists have been examining into the use of colors in foods. But even the German authorities agree that color is the cloak of most frauds in the food business. With the aid of color, every article of food has been successfully imitated. With color to depend upon, there is little need for selecting the best suited feeds, and treating and culturing cream in such a manner as to produce a delicious butter with sufficient natural color. Little attention need

be paid to the growing of fruit and vegetables uniform in quality and color, or the treatment of the wholesale lot so that it will be uniform in appearance when it leaves the process of preservation, since no care in production or preservation would produce a color which can compete with that added by aniline dye.

The manufacturers claim, and it cannot be disputed, that the use of a harmless color to restore the appearance of a good quality of fruit, whose natural color has been partly lost in cooking, is not concealing inferiority, but makes the material, which is standard in all other qualities, pleasing to the eye, as, for example, in the case of strawberry preserves. But where can the line be drawn? Once throw the gate open and the imitator enters with his saccharin and glucose, starch and waste products from the fruit factories, acids and antiseptics to color compounds for the market which are worthless and often harmful as foods.

Color should be no longer the subject of class legislation. The dairy interests defend its use to improve the quality of cheese and butter; the packers to change the appearance of their oleo-margarine; the vinegar factories to help them make cider vinegar without apples; the French to protect their industry in coppered peas and all of the imitators as their *modus operandi* in deceiving the purchaser. In each and every instance it either deceives as to the quality of the product, or aids the sale of that which has no value, or assists the sale of some product under the name of another at double its market worth.

The antiseptic controversy will continue for many years yet, if we wait to determine just what effect certain quantities of antiseptics in foods have upon the health of different individuals. The only practical prohibition of antiseptics will be a control of the conditions necessitating their use. Such as attend the wholesale gathering of fruit and vegetable crops into the catsup and jam factories; the efforts of manufacturers to please the taste of the trade, and make an article that will keep, at the same time; the loss by spoiling and breakage of foods sent out into the careless markets, and the ignorant treatment of them when they come into the hands of the consumer, who demands that a perishable food must keep sweet when opened and exposed for a week or longer in the kitchen or restaurant. In the control of these conditions governments and food interests must co-operate and not fight each other for technical concessions and delays.

## LABELING.

Uniform labeling was the cause of the organization of the National Association of the State Dairy and Food Departments. This is not a campaign for the sole purpose of having adulterations labeled, but to eliminate the adultera-

tion and need for the label. Some people think that the food commissioner's work will end with the labeling of adulterations and the manufacturer's troubles end with the labels being uniform. To be frank with the manufacturers, the label is only prescribed in order to apply the lever of public opinion to raise the quality and purity and to enforce the honest sale of foods.

During the last year two manufacturing associations have co-operated with me in gathering sets of labels put on food to meet the requirements of the different state laws. I also made a special collection of the labeling on foods sold in Kentucky. I then grouped those state laws which are similar, or capable of similar interpretation, to see why the labeling for such a group of states is not uniform. I was led to conclude that the lack of uniformity is due to different constructions put on the statute by the commissioner on the one side, but more to an attempt on the part of the manufacturer to label for the purpose of legalizing his product without giving the damaging information plainly to the purchaser.

In the majority of the acts, however, the language specified for the label is different from that in a similar provision of some other acts; but even this difference can be traced to attempts to make the statute as lenient as possible, on the one hand, or to make it as strict as it should be, on the other, putting the act in a class by itself.

The labeling problem is necessitated, in the first place, by the need of labels to make public some adulteration practiced in the preparation of the article, and the lack of uniformity results more from attempts to evade the intent of the law by wording, typing and placing the label so that it will convey little information or be overlooked. I was led, therefore, to conclude that foods could be so put up and named as to not need the qualifying phrases of added labels, and until they are put up free from all attempts to cheapen their preparation without the knowledge of the consumer, or to misrepresent their nature and food value, the question of uniform labels will remain unsettled, even were all of the state laws the same. Sufficient evidence in support of this is found in the difference in labels put upon the various brands of the same article under one state's law, although the same form of letter has been sent to each of the several manufacturers, asking for an interpretation of the labeling provision.

Labels are not intended to legalize adulterations, but to eliminate them. The trade-mark controversy has evolved the doctrine that labeling must be so plain "that ordinary purchasers buying with ordinary caution will not be misled." (96 U. S., 245.) The Minnesota court broadly holds, in passing on the constitutionality

of the state's food law, that "no man has the right to keep secret the nature of a substance which he sells as an article of food." (State vs. Allison, 50 Minn., 5.) Add to these the undisputed principle that all labeling should tell the essential truth, the whole truth, and carry out the full purpose for which it was intended, and the trade will find policies broad enough to keep their goods from conflict with the laws of any state.

#### ALCOHOLIC BEVERAGES.

The search of the food analyst has found a practical solution for a part of the prohibition problem. Investigation shows that adulteration and misbranding are practiced more in the manufacture and sale of spirit beverages than in any other product put up for human consumption. In the United States there is a statute which will license any man to "spuriously imitate" alcohol beverages as he pleases, and eighty per cent of the whiskeys consumed are made synthetically under this license. We have found an imitation for beer sold in a "blind tiger" in one of the prohibition districts of Kentucky which contained Indian hemp for hops, soap bark for foam—an imitation made from a stock of brew slops and neutral spirits artificially carbonated and colored. It would seem that a pure product would be better than such mixtures; that public sentiment would support a rigid inspection to maintain purity where prohibition is at present impossible. It would also seem that laws governing the sale of these products would not be so easily broken if only the pure products were allowed sale, because there would not be the enormous profit that comes to the rectifier and imitator to break laws. It is out of this 80 per cent of adulteration that most of the problem comes. And it is from the illegal, easy profits on these goods that the funds to influence the enactment and enforcement of laws regulating the sales of alcoholic beverages and their kindred trades are drawn.

Can any one show honest cause why the great liquor problem should not be brought within the investigation of chemistry and under the law of the honest label? Can anyone doubt but that the first step towards a practical control of the evils attending the consumption of alcoholic beverages would be to purify and improve the billion and half gallons consumed by the American people for example each year? Would it not be better for the problem if honest labeling was enforced and the fraudulent methods in the business ended? Would not a campaign for purity and clean saloons and clubs put the problem upon a plane where it would be more effectively controlled?

Such a work is within the scope of the pure food departments. And once begun, many of the distillers and brewers of pure products will sever their alliance with the imitator and rectifier and

co-operate to raise the business to such a plane. This work needs clearer methods of analyses to gather evidence and better legislation to put the evidence into effect. Because it is difficult and disagreeable is no reason why it should be longer shirked.

#### A WORK FOR CO-OPERATION.

The principles of the pure food work are farther reaching than the mere analysis of butters and milks. The control of industries by honest analyses and impartial enforcement of their findings may throw much light into the general problem of industrial legislation and its enforcement. During the last several years the nations have been topping their tariff walls with standards of purity. Where the tariff is for the purpose of trade protection, and not revenue, and the industry solidly established, these port and frontier standards may take the place of tariff protection and settle a portion of the growing tariff wars. Well-established industries need the protection of freedom from infringement on their trade reputation and from dishonest competition in the markets more than the protection of special privileges. So far the port inspections have been established out of a spirit of trade retaliation more than as measures to protect the health and food funds of the government's citizens. Let the nations strive mightily in other affairs, but why cannot we eat and drink as friends, and establish uniform interstate and international regulations to control food adulterations and guarantee the quality of food substances, so that the standards imposed by the laws of Illinois may be accepted in good faith in a mining camp in South Africa? Laws free from special privileges to private interests or the protection of one industry at the expense of another.

The doctrine of accession in law holds that if your calf comes into my pasture, and I fatten it unknowingly, I am liable to you only for the value of the animal before it was improved by my feed. But if I intentionally take it into my herd, I am liable for its full value at the time you discover it, however much I may have added to its weight and market worth. We have called the manufacturers into this conference to give their practical knowledge in the discussion of the questions to be considered and help accomplish the work of the congress in putting its resolutions into effect in the factory. Where adulterations are necessitated by conditions which those who make and deal in foods cannot control, the food interests have our hand to co-operate in the control of these conditions. But in all unnecessary and willful violations we have no compromise. We know that the changes in your business which the enforcement of pure food laws have made, and will make, are expensive. We will feel failure if standards of purity are

not put into effect in the factory, and this cannot be done without large expense.

It is impossible to make and enforce good laws to control food industries without injury to some commercial interests. But if the lines of commerce have eminent domain over private interests, how much more should that largest burden of commerce which constitutes the first necessity of life, and whose purity affect all health, have eminent domain over the profits of adulteration and false labeling?

We have made an earnest effort during the past year to gather the best authority from all sides, to exchange ideas, arrive at conclusions and get the facts before the people, to be acted on by public opinion. Let the discussion be frank, and let it not be counted an offense if evidence is attacked, if opinions are disagreed with, if false positions are exposed, or the work of commissioners and experiments of scientists are criticised. This Congress has some far-reaching problems to consider; the adulteration and false branding of foods in general, purifying alcoholic beverages, the baking powder fight, the exposure of experiments that have been made for the purpose of defending unsafe practices in the food industries, the adoption of standards and recommendations for needed legislation. This Congress should be a beginning of a frank understanding between food control authorities and food manufacturers and extended international conference and co-operation in the work of controlling the adulterations in and raising the standards of the world's food.

MR. MUELLER: Mr. Allen makes the statement that in Germany and France the governments do not permit the use of a preservative. This is not correct, because I know from actual experience that they permit the use of sulphur to preserve their wine. They recognize the necessity of it, and the government permits its use.

MR. ALLEN: Dr. Smith's statement to me, in discussing that with him, was that the government was working towards the elimination of that; that they recognized it had to be used now, but they were trying to study the problem so that they could gradually eliminate it.

CHAIRMAN BAILEY: We will now listen to an address on Food Laws and Food Inspection in Italy by Guido Rossati.

#### ADDRESS BY HON. GUIDO ROSSATI.

##### FOOD LAWS AND FOOD INSPECTION IN ITALY.

BY GUIDO ROSSATI.

Italy, as you are aware, holds in the teachings of hygiene a prominent record from very ancient times. Many are the golden precepts of hygiene left us by ancient Latin authors, such as Celsus and Galenus, both celebrated physicians of that

time; and not only did ancient Rome declare supreme law the health of the people, but she set a forcible example of attaining this end.

In fact, that city cultivated from its earliest times a love for trees, and was supplied with an abundance of good potable water, derived hundreds of miles away, from the pure sources of the Appennines, and conveyed to Rome through those stupendous water ducts that even to-day attract the attention of travelers approaching the eternal city.

Both the republic and empire had special functionaries for the care of public health. They were called "ædiles" and superintended the supply of food products and water. Under Emperor Augustus they became subject to a magistrate, called "præfectus annonæ," whose principal duty was to keep the city well provided with grain of good quality.

The great number of public baths and thermæ, of which Rome had 856 and 11, respectively, under Emperor Diocletian, the largest being those bearing his name, and those of Caracalla and Domitian, capable of accommodating 1,500 people, and of which are still visible the ruins, attest the cleanly habits of the ancient Romans. Furthermore, the almost perfect system of sewers, coping with the necessities of a population which, in the most prosperous times of Rome, reached over one and a half million souls, is still the subject of admiration from the student of such works.

Among the many wise laws that Latin legislators had devised for the well being of the people were not wanting those which punished the abuses of the flesh and wine, nor those which enforced the cultivation and improvement of the soil, and the preservation of the forests, or which provided for the destruction of unhealthy foods and prescribed cleanliness in the clothing worn by the people, in their homes and in the streets. Add to the effect of these providential laws the love for gymnastics and athletics which was in-born in the Romans, and which they brought to a high standard of development through their public games, the fame of which has descended to us, and it will easily be seen where lay the secret of the strength and energy which made of the ancient Romans such formidable factors in the history of the world.

In less distant times Italy reaffirmed, with the teachings of the celebrated school of Salerno, her prominent position in this, as in other branches of human knowledge. Saladin of Ascala, a physician to the grand constable of Naples, who lived in the fifteenth century, studied and wrote on the aromatic principles of drugs and described methods of preserving foods, in speaking of which he cites cases of adulteration which were punished with fines and the loss of civil rights. Bartoletus, an Italian physician and hygienist, who taught at

the University of Bologna in the early part of the seventeenth century, discovered milk sugar, which he called "manna of milk," and on which Ludovico Testi, another hygienist of fame, later on, wrote an entire treatise. Francesco Redi of Florence, at once a poet, physician and naturalist, who lived in the seventeenth century, was the first to attempt the analysis of spices based on the weight of their ash and the form of the crystals obtained from the water of lixiviation of the ash, for the determination of its constituents. Italy maintained, in comparatively modern times, her reputation in the hygienic field, associated with the names of Ramazzini, Porzio, Cornaro, Mercuriale, Carminati, and, at the present day, with Mantegazza, Pagliani, Celli, Grassi, etc., who need no introduction to students of hygienic matters.

The nineteenth century witnessed the accomplishment of the greatest discoveries in the field of science; and hygiene, which had remained till then in its infancy, gradually rose to such complexity of studies and importance in its relation to the well being of humanity to have engaged the attention of a greater number of students and also to have attracted the most careful consideration from legislators.

The protection of public health, which is the aim of hygiene, "is," as Bizzozzero states, "one of the principal duties of the state. As the preservation and defense of life was certainly the reason of social convivence, and as the state is the representative of society, it is logical that it must provide for its defense. It is, moreover, its duty to protect the interest of the masses against individual interests, often opposed to those of the many. Human nature is such that, chiefly owing to the environment in which man lives, he aims more to his own advantage than to that of his neighbor, and the egotist is seldom so altruistic as to look for his own advantage in that of the community. So it happens that the vendor of food products does his best to buy as cheap as possible and sell at the greatest profit, and in this race for gain the vendor, under the strain of keen competition, not unfrequently tries to find his profit in the sophistication of the goods, not ignoring that in this way the customers will often pay dearly for his gain. The gold fever and the knowledge or supposition that others do likewise gradually enfeeble the scruples of conscience, and in this way society would be exposed to great evil if the government, with wise laws and rigorous supervision, did not try to prevent or suppress these abuses."

"It is a well-known fact," continues the author above stated, "that the authorities, in the fulfillment of this duty, are often confronted by the opposition of the otherwise interested parties, who hypocritically pretend that these laws offend

the principles of freedom of trade, acquired at the expense of so many sacrifices. But liberty is not license, being, as De Gerando says, 'the power to do what one likes in the social state without causing injury to others.' One of the functions of the state is precisely that of preventing that a citizen does actions which may be noxious to the community itself; and the state, as the representative of society, has full right and power to defend it."

Food is, next to air, the greatest necessity of life, and the study of the kinds of food adapted to human existence, their relations to the needs of the human body, their influence on the health of the individual, their quality, their purity, or freedom from matters foreign or injurious to health, is one of the essential studies of hygiene.

This science, therefore, teaches us how to protect ourselves against the infective influences which undermine health, caused either by ignorance, neglect, or dishonest desire for illicit gain. Its investigative power in whatever relates to human vitality, and its condemnation of whatever hurts this vitality, has exposed it often to unjust accusations. But I need not dwell longer in demonstrating that the accusation, for instance, of its interfering with the freedom of trade is entirely absurd, it being, on the contrary, a protection to the honest dealer, as well as to the consumer.

Besides the dilemma of either protecting public health or allowing it to be jeopardized by conscienceless men, no one will hesitate a moment from siding with the legislators and encouraging their efforts in favor of the former. An important part of these efforts is the rigorous inspection of the foods sold.

The falsification of alimentary products is by no means an invention of modern times. It has always been practiced, as the citations of ancient recorded cases prove. We learn from these that in past ages adulterators were punished not only by imprisonment and fines, but with more humiliating penalties, and to expiate their infamy they were often compelled to wear in public a placard with the announcement "Falsifier," or something similar, written in conspicuous characters. In some countries punishment took the shape of a sound whipping, or in extreme cases even capital punishment was resorted to, which in one case, at least, was applied by giving the offender a dose of his own medicine. This happened, not in Italy, but at Biebrich, on the Rhine in 1482, when a falsifier of wine was condemned to drink six quarts of his own wine and died from the effects.

Charles V imposed this punishment on inveterate offenders, or on those who had accomplished the fraud in such artful way as to render detection difficult. These severe punishments were gradually superseded by milder chastisements.

It is, however, a well-established fact that the adulteration of foods has assumed larger proportions in modern times. This, to a great extent, is due to the evolution determined by progress in the economical life of nations, and may be a consequence of the subdivision of labor in the preparation of food products.

When, as in ages past, alimentary products were grown and manufactured by the consumer himself, or the consumer bought direct from the farmers the raw food materials, such as grain, meat, etc., and prepared the foods himself, he was certain, or at any rate, had greater security, that he was consuming the pure article.

To-day, on account of the tendency of the population to concentrate in cities and towns, industrial having proportionately outgrown rural life, it becomes a necessity that food products be bought in greater proportion in a condition more ready for consumption, and under such conditions adulteration becomes more feasible and difficult to detect and suppress. This does not, however, exclude the possibility that in past ages adulteration may not have been greater than we are led to believe, considering the primitive and sometimes even ridiculous methods of detecting it, such as was the case, for instance, with the ale in England in the early part of the sixteenth century, when ale inspectors were required to test it in the following manner: Some of it was spilt on a wooden seat and on it sat for a while the ale tester, attired in leather breeches, which, in case sugar had been added to the beer, would become adherent to the seat, so as to make rising difficult, and otherwise, not; in which latter event the ale was to be considered pure.

Chemistry, with its portentous progress and its manifold resources of substituting the artificial for the natural, has offered to the student of its mysteries greater facility of effecting numerous falsifications, but at the same time, let it also be stated that chemistry furnishes ample means of detecting them.

Since times beyond record legislators have given their valued attention to the subject of frauds in the preparation and sale of food products, devising laws and means whereby to prevent and suppress them. The simple statutes of former times have evolved with the progress of civilization and the advent of the present epoch into as complete and thorough sanitary laws as it is possible to devise, defining adulterations and providing specific penalties for their repression.

Falsification of a food product is defined by Balloni as "the alteration to which an article is subjected in order to deceive the buyer." It comprises, therefore, not only the addition to one article of another of different nature and cheaper value, but also the substitution of one product, or ingredient, for another, and the admixture to one

article of a substance of the same nature, but of inferior quality, so that the result is an article less proper to the use than the original and of a lesser value than that implied by the designation given to it. Falsification is, moreover, the false designation of an article with regard to its origin, place of manufacture, contents, etc., and an article is deemed altered, if not exactly adulterated, when it has undergone natural changes that depreciate its commercial value and decrease, or destroy, its fitness for consumption.

The purport of sanitary legislation has always been, and must be, to strike falsification whenever and wherever found, without admitting, as a general principle, ignorance or good faith, which would tend to excuse the malpractice. A merchant is under the obligation of knowing the quality of the goods which he sells, and, as the law does not admit of ignorance, he must bear the consequence of his actions.

Experience has demonstrated that the more severe a law is against falsification the better the results. In the suppression of food adulteration it stands as true as in surgery that, "the merciful doctor makes the wound foul," and as a logical sequence alertness in supervision and severity in repression are necessary conditions for efficiency in the application of food laws.

With these principles sanitary legislation in Italy has identified itself. Italy has, of late years, passed food laws and devised a system of food inspection which has been enforced with great benefit to public health, commercial honesty and credit, and to the economical welfare of the nation. The passing of the law of December 22, 1888, which replaced that of March 20, 1865, in which latter had been molded the sanitary laws of the various states in which the country was divided before 1860, brought great improvement over previous conditions.

It is, therefore, only since the realization of its unity that Italy has been able to take up seriously the matter of food legislation and inspection, which received with the law of 1888 the first practical stimulus and organization. This law, complemented by the regulations promulgated on July 26, 1890, made it compulsory for municipalities with a population above 20,000 souls to establish chemical laboratories and organize municipal services of food inspection in charge of competent technical men. Other laws specially framed for the prevention or suppression of frauds in the preparation and commerce of certain products of special importance to the country, such as wine, butter, etc., the necessity of which had become manifest in the public interest, followed with marked beneficial results, such as a decrease in the number of adulterations, higher standards enjoyed by Italian goods abroad and a reduction of the death rate from 30 to 22 per mille, which latter improvement, however, is due also, if not

principally, to the amelioration of other important sanitary conditions.

The above stated laboratories are under the supervision of the Director General of Public Health, a branch of the Department of the Interior, in which is centered the executive power for the enforcement of the sanitary laws of the country. This power is exercised by means of provincial and municipal sanitary officers as regards the executive, and by a superior and provincial council and municipal sanitary committees, composed respectively of the most competent men in these matters, as advisory bodies. In municipalities with a population less than 20,000 souls the inspection of foods and application of food laws devolves upon the sanitary officer, a medical man, who can have recourse for the analysis to the nearest laboratory.

The inspection of foods is assuming daily greater importance, as the merchants avail themselves of these opportunities of controlling the purity of the products they trade in.

An analysis of the Italian food laws shows that the fundamental principles underlying them are of a two-fold character, aiming first to prevent, and next to repress falsifications. Of a preventive nature are the provisions prohibiting, or imposing restrictions on, the sale of materials used to adulterate, when it is apparent by advertisement or otherwise that they are intended for this purpose, the provisions subjecting industrial processes followed in the manufacture of certain alimentary products to the approval of the sanitary authorities, those prescribing the denaturalization of certain by-products in order to prevent their being destined for alimentary purposes. The inspection of animals, as to their healthy condition and treatment, and destined for meat or milk production, and the extending of this inspection to the products obtained therefrom, as well as the establishing of standards of composition and purity of foods in general, for the guidance of both producers and vendors, and for the application of the law, may be considered also as measures of a preventive character.

Essentially of a repressive nature are, instead, all the other features of the law, establishing the verification as to purity and proper branding of the products sold, and the punishments to be inflicted on violators. These latter are sufficiently severe to act as a salutary lesson on transgressors and deter them in most cases from a repetition of the offense, being naturally heavier when the adulteration has been accomplished with materials injurious to health, or on articles which are considered first necessities in the nutrition of man, or in case of repeated offense. They are, moreover, proportionate to the importance of the transgression and never limited to a fine alone, in which case it might pay the adulterator to pay the fine and continue in the malpractice; but,

wisely, they consist, as a rule, of both fine and imprisonment, always include the confiscation or destruction of the condemned merchandise, and often the denunciation by publicity of the names of violators and of the sentences and penalties imposed on them, which must be done at their expense.

The fact that to obtain a proper enforcement of food laws the necessary appropriations of funds must not be wanting is receiving constantly greater attention, and a novel departure in the application of food laws in Italy, which is expected to bring good results, is the participation accorded to officials detecting offenders in the sharing of the moneys collected by the government as fines.

Some of the provisions enforced in Italy against the preparation and sale of injurious, adulterated or misbranded food products are contained in the penal code; others more specific in the sanitary law of 1888; others more detailed still in special laws passed for the protection of the purity of certain important articles. From the penal code, which punishes with imprisonment from one month to five years and a fine from one hundred to five hundred lire whomsoever counterfeits or adulterates food or medicinal products with matters injurious to health, and with a fine of from 50 to 500 lire when the adulteration is not of such nature as to endanger the health of the consumer; coming to the food law of 1888, which prescribes the confiscation or destruction of the condemned merchandise, and further, to the special laws which comminate publicity to the sentences and penalties imposed on violators and their suspension from business for a certain period, is all a network of useful legislation, devised for the prevention and repression of frauds.

The law of 1888 prohibits, under penalty of imprisonment of from six days to six months and of a fine of from 10 to 100 lire, besides the forfeiting of the merchandise, the sale or supply of food products or beverages recognized spoiled, infected, adulterated, or through any other cause unwholesome and noxious to health. Also the sale of badly tinned kitchen utensils, or of packing materials, of such nature, or containing such impurities, as to render the foods injurious to health.

According to the regulations for the application of said law, foods and beverages adulterated with foreign substances or artificially dyed in order to imitate the natural color, are considered, save in certain exceptional cases, especially unwholesome and noxious to health.

Food products and beverages which have been deprived in part of one or more of their nourishing materials, or have been mixed with materials of inferior quality, or have been treated in some such way as to alter their natural composition, unless sold with a statement to that

effect, are considered adulterated, even if not adjudged noxious within the meaning of the law.

The law prohibits the manufacture and sale of a food product or beverage the nature, substance or quality of which does not correspond to the name by which it is designated or demanded. This provision does not, however, condemn the addition of harmless ingredients used in order to facilitate the sale or consumption, provided they are not used in order to fraudulently increase the volume or weight, or to conceal inferior quality, and that such products are labeled with a statement of their true nature.

A food product from which has been subtracted in whole or in part a constituent of value cannot be sold without a statement to that effect.

I would exceed the limits of this paper if I were to go into minute details as to the requirements of purity exacted for each single food product in Italy. I will, therefore, confine myself to some of the most important requirements which are of general application, and to some of the principal articles.

The use of preservatives is generally forbidden, likewise that of injurious coloring matters. Innocuous coloring is allowed only in case of a few articles, subject to declaration. Poisonous metallic salts, free mineral acids, saccharin, dulcin, glycerin, impure glucose and similar injurious adulterants are always irremissively condemned. Mixtures of two different grades of an article must be sold under the name of the inferior, and in every case a product is obtained from mixture a statement to that effect is required. Sound condition, freedom from disease, infection or deterioration are *sine qua non* for compliance with the law requirements.

In the case of breadstuffs a rigorous control is enforced as regards the sound condition and purity of cereals, flour, especially maize, the sale of which is not allowed unless absolutely immune from deterioration or matters rendering it unfit for consumption. Bread obtained from unwholesome flour, improperly made, deteriorated, or containing more than the allowed limit of moisture, cannot be offered for sale. Macaroni must fulfill like conditions, and if colored otherwise than with the yolk of egg, but with harmless substances, will be allowed for sale upon notice of it being given to the buyer.

In the case of meat products the most rigorous inspection is prescribed from the time that the animal enters the slaughter house until the products, which must be officially certified to as to their wholesomeness, leave the packing house dressed and cured.

Likewise in the case of milk and dairy products much stress is laid upon the healthy condition of the cows and upon the greatest cleanliness being observed in all departments, taking care that causes of disease or infection

be prevented. The watering of milk is severely punished. Butter and cheese are required to be sound, pure and free from foreign fats, or margarine, in which latter case the sale is allowed only when declared respectively as "artificial butter," or "margarine," and "margarined cheese." Confiscation of the merchandise and a fine of from 200 to 2,000 lire, and, in case of a second offense, also imprisonment of three months and suspension from business from ten days to six months, are comminated for those selling as genuine butter adulterated with margarine.

Vegetable and edible oils or fats must be sold under proper designation, and when rancid cannot be sold for food. Mixtures of olive oil with other vegetable oils must be sold as mixtures.

Wine, which is a staple and the popular beverage of Italy, has received special legislative attention in order to protect both growers and consumers against frauds. The special law at present in force dates from the 11th of July last and abrogates that of March 25th, 1900.

According to this law, only the wines obtained from the fermentation of fresh grapes are considered as genuine, all others, including those obtained from currants, being considered otherwise and prohibited. The wine must be free from preservatives, artificial coloring or other foreign matters, and the ratios of its constituents must be within normal limits.

The code of regulations governing the application of the law enforced since Nov. 25th, 1900, and containing definitions, standards and treatments allowed on genuine wines, is now being revised.

The law punishes violators with the seizure and destruction of the non-genuine wines, with a fixed fine of 100 lire and a proportional fine of 5 lire per hectolitre sold, increasing the former to 1,000 lire in case of a second offense, and with suspension from business for a period of from three to six months for the third transgression. The proportional fine is raised to 10 lire per hectolitre in case the non-genuine wine was intended for exportation, and the other penalties applied to the fullest extent.

With the practical aim of preventing, besides repressing, the law prohibits and punishes with a fine of 500 lire the preparation and sale of substances qualified as suitable to produce and artificially color wine, and the advertising of such, with a penalty of from 50 to 500 lire.

Fruit juices, or liquids containing sugar and alcohol destined to the preparation of wines not genuine, must be destroyed.

The name of violators and the penalties inflicted are published at their expense in the newspapers and filed in the records of the chamber of commerce, municipalities and agricultural societies of the province where the offenders reside, and in case the wine was intended for exportation,

also in the records of the Italian consulates in the country of destination. The officials receive 50 per cent of the total fines collected, which system, I might say, has the desired effect in securing a strict application of the law.

Vinegar, which must be stated whether wine, malt, cider or artificial vinegar (the last named, if prepared by diluting acetic acid), according to its origin, must contain at least 4 per cent of acetic acid and be free from mineral acids, injurious coloring or other foreign matters.

Beer, a product of comparatively limited consumption in Italy, must be brewed from barley or other cereals, hops and yeast only, and must not contain other coloring matter than derived from the torrefaction of malt, be sound, free from preservatives and fined only by mechanical or other innocuous means.

Liquors are, as to purity, strength and branding, subject to the requirements of the excise law, which prescribes that they be exempt from injurious coloring or other noxious matters, and contain not more than two per mille of impurities, and be labelled true to name. In pure wine spirits is required a strength of at least 85 per cent of alcohol by volume and in pure spirits of other origin a minimum graduation of either 90 or 95, according to the material from which they have been distilled; in brandy, a strength of from 40 to 65.

For tea, coffee, cocoa and spices is intended the pure product of its respective plant, without damage, substitution, extraction or other adulterations. Coffee substitutes can only be sold as such and never under the shape of the coffee bean.

Candy and other sugar preparations, including syrups, candied fruits, jellies, marmalades and fruit juices, besides answering to the general requirements of purity already stated, must be exempt from decayed vegetable substances, mineral matters, or other impurities, and only the natural coloring matter is allowed in their preparation, save in the case of candy, in which the use of harmless coloring matter is tolerated.

Under the designation of sugar can be sold only the product of the cane or beet, containing no more than 5 per cent of reducing sugar.

Vegetables and fruits unripe, decayed or artificially colored, and tubers sprouted, frosted, or diseased and unhealthy, are condemned.

Alimentary preserves prepared with damaged animal or vegetable materials, altered, or to which have been added substances of inferior commercial value, unless so stated, are debarred from sale. In preserving naturally colored vegetables or fruits no addition of coloring matter is allowed.

Mineral waters must be secured from healthy sources and manufactured by such processes as not to endanger public health. Further, they are

required to bear a statement of their physical, chemical and biological properties on the label.

From the review I have presented of the food laws of Italy, it will be seen that, considering the comparatively short time since the country has been united and enjoying national life, notable progress has been made, although there certainly remains room for further practical work in this field.

The safeguarding of the health of the people is daily becoming a problem of engrossing interest for legislators of all countries to such an extent that in some it is even proposed to create a cabinet minister for the furtherance of hygiene, which is not surprising when the vast importance that the preservation of the health of the people is to society and to the state is considered.

*"Mens sana in corpore sano"* is probably more an aim of the statesmen of to-day than it ever has been in the past, and when we consider that the best way to attain this end is to eliminate the causes of disease by means of efficient health laws, of which food laws are an important issue, their necessity appears all the more manifest. The sanitary law of Italy, while not claiming to be faultless, has, however, been a step in the right direction.

Professor C. Finkelnburg of the University of Bonn, in his work on the historical development and organization of public hygiene in civilized countries, states that "Italy, since the realization of national unity, has made very important progress in public hygiene, and has with various laws accomplished in a remarkable manner its organization." He compliments Italy in having placed this service beyond the reach of political interference, which cannot be said of all other European countries.

Dr. Langlet, a French deputy, in a report accompanying a health bill submitted to the French chamber of deputies in 1892, reviews foreign legislation, and, speaking of Italy, remarks: "Italy has, in 1888, passed a sanitary law as complete and concise as it is possible to frame, making its seventy-one articles a real hygienic code."

Likewise, Senator Cornil, when introducing the above stated bill in the French Senate, flatteringly referred in his accompanying report to the Italian sanitary law of 1888 as "one of the best, if not at present the best," of European legislations.

It is well known and deplorable that considerable disparity, not justified by the identity of purpose in view, still exists in the hygienic laws of the various countries and even of the various states of this union, which is often the cause of unnecessary inconvenience to international and interstate commerce.

At the Hague Hygienic Congress and at the Vienna International Congress of Chemistry the

necessity of a convention for securing, without interfering with internal legislation of single states, uniformity in the laws for the prevention and repression of frauds in the preparation and sale of foods destined to international commerce, and also in the methods of food analysis and food standards, was forcibly urged, and it is desirable that it be further endorsed and emphasized by this Congress, so that it may soon become an accomplished fact. Thus eliminated the discrepancy that in this, as in other matters, can only be an element of weakness, giving the semblance of argument to interested opposition, and thus ensured greater unity of action, the cause for which we are striving will be advanced proportionately, avoiding the complaints that are at times raised in the application of food laws.

Italy, whose contribution to the progress of hygienic discipline is traditional and not to be belittled, is following with great interest the pure food movement that has accentuated itself in this country during the last few years, desirous as she is of profiting by the experience of progressive countries in the solution of questions appertaining to the public welfare, and welcoming any right step in this direction.

The United States, which is at present striving for a national pure food law, which I sincerely hope will be realized in the near future, have in legislation of this, as of other kinds, not only the advantage of the experience of other peoples, thus obviating their errors, but also in a marked degree the more important one of an individuality, which, springing, as it were, from an improved seed sown on fertile soil, is bound to be conspicuous. In this movement this country is showing a vigor and energy that bear evidence of the serious consideration given to the problem of safeguarding the health of its people, and which undoubtedly are factors of that success and excellence that is bespoken to it by the knowledge and conviction that public health is the foundation on which rest the happiness of the people and the power of the nation.

CHAIRMAN BAILEY: The next will be a paper by Dr. William Berkeley on "Food Laws and Food Inspection in Porto Rico."

MR. BERKELEY: Mr. Chairman, and Gentlemen of the International Pure Food Congress: I should like to say by way of prelude to my remarks that if it appears to some that what I say is rather a history of the Superior Board of Health of Porto Rico than of food laws and food inspection, it is because they have heretofore been conducted under one head and therefore the history of one is inseparably connected with the history of the other. Up to the opening of the present year the Superior Board of Health was a bureau of the Department of the Interior. The last legislature,

however, passed a law combining the Superior Board of Health with the bureaus of Charity and Correction and Dr. Ricardo Hernandez, a member of the executive council, corresponding with the upper house of the legislature, is now at the head of the combined departments, and having now a representative and a voice in the upper house of the legislature, we are confident of accomplishing a great deal more in the way of sanitary reform than we have before.

#### ADDRESS OF DR. WILLIAM BERKELEY.

##### FOOD LAWS AND FOOD INSPECTION IN PORTO RICO.

It was perhaps a not altogether unfortunate fact that the necessity of sanitary reforms in those countries which, as a result of the Spanish-American War, came under the more or less permanent control of the United States, was so immediately apparent at the time of the change of sovereignty that the urgent need of putting such into immediate operation could not fail to be detected, and it was by reason of this fact that in Porto Rico the creation of an American superior Board of Health followed closely the inauguration of an American form of government in the island.

It is true that the necessity of some form of sanitary supervision had been long recognized by those to whose care Porto Rico had been confided for four centuries prior to the American occupation, and so the Board of Health established by military order June 29, 1899, was, in a sense, only the successor of a long and illustrious line of predecessors, whose rule began in 1768 and whose membership included the various governors general, the heads of departments of the different governmental offices, surgeons of the army and navy, quarantine officers and other high functionaries of the succeeding Spanish administrations.

We cannot doubt that in such a multitude of illustrious counsellors there was much wisdom but the exercise of such wisdom as there was, was so limited in its scope and so frequently arbitrary in its application that the results of the deliberations of these "grave and reverend seniors" fell far short of what might have been expected.

So far as I have been able to learn the functions of these Spanish superior boards of health seem to have been most largely advisory and such legislative powers as they possessed seemed limited to devising ways and means for quarantine control and for the promulgation of rules and regulations for the guidance of health officers, mayors, etc., upon special occasions. Such, for example, as during the occurrence of epidemics or the prevalence of contagious diseases.

Local boards of health were organized in at

least the larger towns of the island in the eighteenth century. These had the power to devise such ways and means as they deemed necessary for an efficient sanitary control of their respective districts, the approval of such by the central board at San Juan being a necessary precedent to their execution. Such an inspection of food products as was provided for by these local authorities was largely in the hands of the police.

I have been unable to learn, from personal investigation, much as to the nature of the food regulations of the various towns of Porto Rico, but have been told that they followed closely the provisions of similar regulations in force in Madrid, these I have been able to examine and found that they dealt largely with the inspection of articles of food and drugs and of the establishments where such were prepared or sold—defined to a limited extent adulteration and empowered the police to bring before the proper tribunal violators of their provisions.

In the absence of all means of making a chemical examination the investigation was necessarily limited to what could be detected by means of the eye, ear and nose.

Even the best laws, however, will fall far short of their purpose if there is no one especially responsible for their execution, and so we find that such laws as were established either by the local authorities in Porto Rico or by the home government in Spain must be considered as evidence of what was regarded as desirable rather than a measure of what was actually accomplished.

The difficulty, therefore, which we have encountered in Porto Rico of putting our food laws into effective operation among a people who have long sat in sanitary darkness, who were to a great extent ignorant of the existence of similar measures throughout the period of Spanish domination, or, who, to a less extent, were reminded of such most frequently only through a very arbitrary and often unjust application of the same, was perhaps greater than it would have been had the first knowledge of such by the people of Porto Rico been followed by such an efficient application as would have inspired a feeling of respect for their provisions and an acknowledgment of their necessity.

What I have said in the foregoing has been mentioned merely to show the condition that confronted those upon whom devolved the duty of inaugurating in Porto Rico a really efficient system of food inspection and control.

Although it would, perhaps, be of interest to some of my hearers if I were to deal with the work of the superior Board of Health of Porto Rico in its entirety, neither the time at my disposal nor the purpose of this address (which is merely to sketch briefly what has been accomplished in Porto Rico in the way of a sanitary inspection of the food supply of the island) per-

mit me to discuss even briefly what has been accomplished in other directions.

I have just mentioned that the first American Board of Health in our island was established in June, 1899 by a military order. This board consisted of three surgeons of the United States Army and Navy, two Porto Rican physicians, and, I believe, a pharmacist, also a Porto Rican. The board was given practically absolute authority to take any action needed to conserve the interests of the public health, and, among other attributes, was that of establishing such rules and regulations as they deemed necessary for a proper control of the food supply of the island.

Accordingly they adopted, as a necessary precedent to the exercise of the authority vested in them, a set of rules and regulations which they recommended to the military authorities and these were issued as General Order 151 in 1899, shortly after the inauguration of the board.

It will not be necessary for me to describe these regulations further than to say that they contained the usual definitions of food, drink and drug, prohibited in general terms the adulteration of such and prescribed punishments for the infraction of their provisions.

Later, orders from military headquarters designated the courts in which cases arising from the infraction of the food laws should be tried and provided for the disposition of the fines imposed.

These first rules and regulations contained nothing relating to food standards, i. e., as regards quantitative composition, and imposed no restrictions as to methods of labeling.

The few military orders mentioned were all that were enacted in the way of food laws during the military *regime* with the exception of a few special orders issued by the board itself in virtue of an authority which it was supposed to possess, such a supposition being proved to be erroneous subsequently, as we will see.

Although military government in Porto Rico ended on April 30, 1900, such of the military orders as were not in conflict with subsequent legislation remained in vigor until all such military orders were finally repealed by the legislature of 1902-3.

Upon the inauguration of civil government May 1, 1900, the first civilian board of health was organized, Dr. Ricardo Hernandez, a Porto Rican and a former member of the military board, being elected president.

This board issued in 1902 rules and regulations which included standards of composition for the most common articles of food. These standards having been compiled under the stress of extreme but necessary haste and from very scanty data proved, as was inevitable, very inadequate, and so in 1903 we attacked the problem of food laws again, having been reinforced in the meantime by an abundant supply of literature

from the United States Department of Agriculture, containing the food laws of all of the states of the Union, as well as of the various European countries, which we have largely used as a guide in compiling our present food laws, which were to become effective in July of 1903.

In compiling these laws the guiding principle has been the greatest liberality in their provisions consistent with a proper regard for the common weal.

We endeavored, in establishing the provisions of these laws, to so harmonize the interests of the food producer or merchant and the just demands of the food consumer, that no legitimate business interests would be injured nor the welfare of the public be disregarded.

While we have tried to avoid all unnecessary interference with the sale of any wholesome article that could properly be considered an article of food, we have insisted that all such should be so marked as to furnish, to any prospective purchaser, an exact idea as to the kind and quality of the article offered or exposed for sale.

Before the final adoption of these food regulations by the board every practical means for making as public as possible the various provisions of these were utilized, including notices in the papers that such laws were being compiled, the subsequent publication of these *in toto* in these papers followed by the publication later of all of the laws in the form of loose leaves and the distribution of these among such as were interested in them.

Furthermore, conferences were held on two separate occasions with the Chamber of Commerce and the League of Retail Dealers of San Juan, the freest criticism of our laws being repeatedly invited.

Much to our surprise, however, upon endeavoring to secure the conviction of a firm in San Juan for the sale of wine improperly labeled, the court, before whom the case was tried, decided that our board had no authority to establish the food laws that I have just mentioned, and so at first it seemed that the time and labor that we had devoted to them had gone for naught.

Fortunately, though, a rift soon appeared in the clouds that now began to gather on our horizon when during the legislative session of 1903-4 such powers as we had imagined we possessed were specifically conferred upon us by legislative enactment, such measures as we chose to adopt being subject merely to the approval of the executive council upon whose support we count with great confidence. I think it probable that since my departure from San Juan such approval by the council has been secured, and with this I think we shall have a set of food laws fully adequate to attain the objects for which they were framed.

Having described briefly the history of food

legislation in Porto Rico, it will, perhaps, be of some interest to describe to some extent the manner in which we have endeavored to put our laws into operation.

For some time after the establishment of the chemical laboratory of the superior Board of Health of San Juan, the only way in which we secured samples for examination was either by means of personal solicitation on the part of the chemist or of the janitor of the laboratory. In case a sample secured by the latter was found to be adulterated, a duplicate sample was secured by the chemist, such duplicate being divided into two parts and sealed and a portion left with the merchant or his representative. This division of the sample has always proved a rather useless formality in Porto Rico, but we have adhered to the custom in the hope that it would at least serve to convince those, from whom such samples were secured, of the desire of the board to offer to them every reasonable means of defense in all cases in which they might be defendants by reason of the infraction of our food laws.

It soon became apparent to our board that in order that the chemical laboratory might properly fulfill its mission as an effective agent in sanitary reform, it would be necessary to organize a corps of inspectors, both in San Juan and other towns of the island, and, accordingly, a beginning was made in the accomplishment of this purpose early in 1900, when a food inspector for San Juan, and towns immediately adjacent thereto, was appointed.

This number was afterwards increased to four inspectors for San Juan, Puerta Tierra and Santurce, one of which was to be occupied in the examination on the wharves of consignments of food stuff as promptly as possible after their arrival. The examination of drugs and medicinal preparations is also a feature of his work.

In securing samples for analysis the method of procedure has recently been modified so as to provide for the division of the sample into three parts instead of into two, so as to allow of the preservation of one portion in the offices of the board to be examined only in case there is a disagreement between the reports of the chemists of the board and of the merchant. As I have just said hitherto this division of the sample has served no good purpose other than that of convincing, I hope, those, from whom the samples are secured, that our board is not only willing but anxious to furnish such with every reasonable means of self-defense.

In addition to these inspectors for San Juan and the territory immediately adjacent thereto, the board appointed, in 1901—I think it was—a general sanitary inspector for the island, whose multitudinous duties included that of inspection of food in all of the towns that he might visit. This number has since been increased to two and

further increase will, no doubt, be made when the necessary financial aid makes it possible.

You will have observed that, in what I have said of food inspection in Porto Rico, I have practically confined myself to San Juan and its immediate vicinity, and at the present perhaps 90 per cent of all samples of food which we examine come from that territory.

From what I have stated, however, in regard to the two general sanitary inspectors, which our board now employs, you have learned that we are not neglecting altogether the inland regions of the island and if we have done far less in such sections than we would like to do, it has been only because insuperable obstacles, chiefly of a financial nature, have lain in the way of an extension of our work.

Those who are familiar with the innumerable difficulties that beset the pathway of food sanitarians, even in those parts of the world where the importance of a pure food supply has long been recognized, will be able to appreciate the magnitude of the problem, whose solution has been confided to the health authorities in Porto Rico, where ignorance of the reasons that makes sanitary reforms necessary, is only a phase of the lamentable ignorance so prevalent in that section.

I have for a long time been thoroughly convinced that no sanitary measures would ever attain their maximum efficiency until those who frame such avail themselves of every possible means for making their intent and purpose plainly evident to those whose interests they are meant to advance, and, it has always been the policy of our health authorities in Porto Rico to explain the real meaning of such measures as they have adopted in order that they might enlist not only the sympathy but the active co-operation of the public in our work.

The results, I think, have fully justified the wisdom of this policy, and while throughout the first two or three years following the establishment of our laboratory the arrival of a sample from the inland towns was an event of such rare occurrence that the appearance of such was generally a matter of surprise, the past year has brought such an increase in the number of these evidences of an awakening to the value of a chemical analysis that it has already become a matter of great difficulty to examine such samples with sufficient promptness.

Far better than this, however, is the fact that in a few of the towns the recognition of importance of food inspection has culminated in the appropriation from lamentably, scanty, municipal funds of an amount of money which will enable the local health officer to do something in the way of practical food inspection, thus not only furnishing a very commendable example of self help but to some extent freeing our hands in San

Juan so that we may devote some time to a host of food articles hitherto necessarily neglected.

So far as I know the first practical evidence of an awakening in the interior of the island to the necessity of doing something for themselves in the way of food inspection appeared in the town of Yauco, where the very enthusiastic and efficient health officer has used the operations of the Babcock milk tester to such good effect as an object lesson that he has, within the last two months, secured from the town council an appropriation of some three or four hundred dollars to provide the means for an examination of the water and such other articles as his equipment and experience permit.

While of slight importance, perhaps, in its direct results, we hail the establishment of this embryonic laboratory as the harbinger of a brighter day for sanitary reform in Porto Rico and as an evidence of a growing appreciation of our work.

Under the Spanish *regime* the various municipalities had practically home rule, which included the sanitary control of their district, subject to the approval of the central Board of Health in San Juan, as I have mentioned. The local boards existed, I believe, in all towns of any importance, and had as their most important members the *alcalde*, or mayor, as *ex-officio* president and the local health officer, who was most frequently a druggist.

The first civilian board of health organized after the American occupation deemed it wiser to abolish all local boards except in San Juan and Ponce, but since the union of the departments of health with those of charity and corrections by the last legislature, the old order of things, so far as the local boards of health are concerned, has been restored.

In the above I have tried to sketch briefly what has been done in Porto Rico, first, in the way of food legislation and, secondly, in the way of enforcing our food laws. The time at my disposal does not permit a description in detail of what we have accomplished, which may appear very little to most, if not all of my hearers.

I shall content myself, however, by concluding with a brief resume of what we have done during the past four years, hoping that in judging such due regard may be given to the nature of the field which we have attempted to cultivate.

The American Superior Board of Health was, indeed, merely the successor of a long line of predecessors but who had been distinguished much more for the length of the official titles of its members than for the wisdom of its deliberations or the efficiency of their measures. Our board found, it is true, in all of the principal towns, local boards of health empowered to devise ways and means for a practical supervision of the meat and drink of their respective districts, but whose authority, if exercised at all, was used in the ad-

vancement of their personal interests or in the humiliation of a political foe.

Our board of health found statutes which, if enforced, would have made adulterated food in Porto Rico most conspicuous by its absence, but which, in part, had been forgotten through disuse or only occasionally recalled through a spasmodic and oftentimes unjust application of their provision and which were rendered null and void through the lack of means to render their practical enforcement possible.

Since the inauguration of an American system of government a central laboratory has been established in San Juan in which more than 2,000 samples of articles of food have been examined—a set of rules and regulations governing the importation and sale of articles of food has been established and enforced with a very fair degree of success.

An efficient force of food inspectors has been organized in San Juan, the chief point of distribution of the island, and this body has been duplicated to some extent in the smaller towns.

Two general sanitary inspectors for the island have been appointed an important part of whose work consists in an inspection of the food offered for sale in all towns visited.

Above all, we have by precept and example succeeded in arousing in Porto Rico such a conviction of the importance of a supply of pure food that what we have been able to accomplish in the past practically unaided by anyone other than those officially connected with the department of health is but a very faint evidence of what we confidently expect to accomplish in the future, with the fullest sympathy of all classes to sustain us and the Porto Rican people as our co-laborers.

If the sowing of the seed of sanitary reform has been laborious and the tillage has appeared at times to be on barren soil we are satisfied as to the thoroughness of our cultivation and look forward with confidence to a harvest which will be most abundant in its yield of satisfactory results.

A recess was then taken until 2 o'clock p. m. of the same day.

September 27th, 1904, 2 o'clock p. m.

Congress met pursuant to adjournment.

CHAIRMAN BAILEY: We will commence the afternoon program with a paper by Mr. Rufus L. Weaver of New York.

#### ADDRESS OF RUFUS L. WEAVER OF THE NEW YORK BAR.

#### THE VALIDITY OF FOOD LAWS AS AFFECTED BY THE CONSTITUTION OF THE UNITED STATES.

LADIES AND GENTLEMEN:

I shall consider the validity of laws as affected by the constitution of the United States only but the same principles are usually applicable to state constitutions. The question of the constitution-

ality of a law may be elucidated by a study of the origin of the constitution.

A government is the regulation of the acts of a people by their sovereign. The sovereign makes the law. In the last analysis he is the law. He is omnipotent. He may abolish all law if he chooses, and leave the people without any rule as to their conduct in society. Since he is the source of all law, his acts can not be illegal; and since he is the source of the constitution, his acts can not be unconstitutional. Such a sovereign was and is the King of England and such a sovereign is the American people.

We obtained our written constitution in almost the exact way that England obtained her unwritten constitution. Indeed we might say that we obtained our written constitution from the English king. The growth of the two are so much the same that it is impossible to study our own constitution without also studying the English.

Magna Charta was the great beginning of the English constitution as we have it to-day. King John granted Magna Charta in June, 1215, and exercised his prerogative as sovereign by annulling it in August of the same year. The people recognized his power to do so. Englishmen for two hundred years recognized this power as existing in successive kings by requiring them to confirm or grant it anew, and it had been so granted thirty-eight times down to Henry VI. Gradually through the course of succeeding reigns the king granted to parliament power to exercise further portions of his sovereignty. The lords and commons merely exercised a portion of the king's sovereignty and that in theory, is what they do to-day. Theoretically, the king could at all times and now can revoke Magna Charta and all these grants of power to parliament and himself be again the only person who could make English laws. While this is so in theory, in practice the opposite is true and has been true for hundreds of years. He has not undertaken to veto an act of parliament for two hundred years, and so when parliament passes an act it is a law, and a valid law. No court exists with power to declare it unconstitutional. It can not be unconstitutional because it is promulgated by the sovereign—the same power that promulgated the constitution. An act of parliament and the British constitution are of equal authority therefore the more recent is the supreme law. It is well settled that our legislatures are like parliament unlimited in their power except as the sovereign, the people, "veto" their acts. That prohibition or veto is in either the state or national constitutions. In this the sovereign people veto as the sovereign king vetoed. The veto of our governors is a word of more limited meaning because our governors are in no sense sovereign. The legislators come direct from the people, the sovereign, and are possessed with

powers unlimited except as prohibited in one of those constitutions.

Magna Charta has an analogy in every one of the original thirteen colonies. The government and laws of each of those colonies constituted an epitome of the government and laws of the motherland. The royal colonial governor represented the English king. The grant of the first colonial charter, analogous to Magna Charta, was made to Virginia in 1621. As the barons forced King John to grant Magna Charta giving them a voice in English government so the Virginia colonists forced Governor Yearly to give Virginians a voice in their government. Judge Story said of them that: "They grew restless and impatient for the privileges enjoyed under the government of their native country" . . . and "That thus was formed and established the first representative legislative body that ever sat in America. And this example of a domestic parliament to regulate *all the internal concerns of the country* was never lost sight of, but was ever afterwards cherished throughout America as the dearest birthright of freemen." This arrangement made by Governor Yearly was confirmed by the council residing in England *under instructions from the king*. That confirmation was by an instrument in writing, called an ordinance, but it was a charter from the king as Magna Charta was from the king, and it gave powers to a legislative body in America as Magna Charta gave powers to a legislative body in England. In the same sense that Magna Charta is an unwritten constitution for England this ordinance was a written constitution for Virginia. Prof. Thorp says of it: "This earliest written constitution for an American commonwealth was modeled after the unwritten constitution of England, and it is the historical foundation of all later constitutions of government in this country." That ordinance or constitution required the Virginia general assembly and council of state "to initiate and follow the policy of the forms of the laws, customs, and manner of trial, and the administration of justice used in the realm of England as near as may be."

Thus we had in England and Virginia, governments alike, in each was a house of the legislature appointed by the king and in each was a house of the legislative body elected by the people and in each was a sovereign, the king, who could take all power from the legislative body. That which was true of Virginia was true of each of the other thirteen colonies. It was the habit of our people at that early day to govern themselves as they had been governed by themselves in England and they never departed from the habit formed. So near was the government of Massachusetts like that of England, that the general court of that colony in an address to the Long Parliament in 1646, said: "For our government itself, it is formed according to our charter, and

the fundamental and common laws of England, and conceived according to the same." And to prove their statement they set forth in parallel columns the fundamental laws of England and their own laws, Magna Charta and their own charter.

With this settled form of our governments, with legislative bodies of practically unlimited power, the day of the declaration of independence came. The colonies then became states but there was no real disturbance in local political affairs. There was merely a change of sovereigns. The king was changed for the people. As the king had taken no real part in their government the change was not noticed. Eleven states then adopted new constitutions but they differed only slightly from their colonial systems. Any change whatever might have been dispensed with, for Connecticut continued without a change for thirty-two years and Rhode Island made no change for sixty-six years. And these two states with royal charters as constitutions and the eleven states with new written constitutions continued, added a dozen more states to their sisterhood with no appreciable difference, if any, in the powers exercised by their legislative bodies. In other words the legislatures were of unlimited power as parliament had been unlimited. C. E. Stevens quotes and says: "The English colonies in America were rapidly developed into a group of independent commonwealths, in which each individual member was, in its organic structure, a substantial reproduction of the English Kingdom."

Up to 1789, the only limitation upon the powers of the legislatures was imposed by the state constitutions. Then came the prohibitions of the Federal Constitution and *its* origin now interests us. Its forerunner was the Articles of Confederation of 1777, which was supposed to form the states into a nation but which really did no more than bind them into a "firm league of friendship with each other." In it each state reserved all its powers and conceded responsibilities to the common administration without conceding the means of meeting them.

When the constitutional convention met in 1787, it was found to be a convention composed mostly of the very same delegates who had framed the state governments which we have seen were "substantial reproductions of the English Kingdom." They did not try to find something new but merely tried to correct and round out the old and tried. England and Switzerland were the only substantial free governments then in existence. The delegates unfavorably criticized Switzerland and spoke admiringly of the British government and constitution. Hamilton said it was "the best model the world ever produced," and Pinckney said it was "the best constitution in existence," and both desired to copy it more closely. Mr. Bryce, referring to the sentiments of the time in

America, says: "The spirit of 1787 was an English spirit and therefore a conservative, tinged, no doubt, . . . but in the main, an English spirit, which desired to walk in the old paths of precedent." And Mr. Justice Miller, late of the Supreme Court of the United States, whose duty it was to interpret the constitution, says that: "No one familiar with the common law of England can read the constitution of the United States without observing the great desire of the convention which formed that instrument to make it conform as far as possible with the law."

So the British constitution, by a process of evolution as systematic as any evolution in nature, became the constitutions of these states and this nation. The Federal constitution merely was intended to unite the states so that the welfare of all would be preserved and no advantages in favor of one as against the other should be had by their intercourse. It limited the power of the nation to those powers therein granted and those which were implied from those granted. So the national and state constitutions point out what the legislature is prohibited from doing and it can do *all* things else; and the United States constitution points out what the national government may do and it can do *nothing* else. So our questions should be: Is an act of Congress specifically or impliedly *permitted*; and is an act of the legislature specifically or impliedly *prohibited*?

The federal constitutional questions usually involved in the food laws were raised and considered by the Supreme Court and eminent counsel in *Mugler v. Kansas* decided in 1887 (123 U. S. 623). That was where Kansas had a constitution and law prohibiting "The manufacture and sale of intoxicating liquors" or keeping them for sale. When this law took effect defendant had brewery property in which he had invested a large amount of money. As a brewery the property produced a large income and was worth and would sell for a large sum. The law, if valid, would stop its use as a brewery, destroy its value and the income would cease. Defendant contended that he was being "deprived of liberty and property without due process of law" in violation of the constitution of the United States, which prohibits such. He claimed a right to continue his business where he had established it and which was admittedly legal when he established it, because the constitution says that: "No state shall make or enforce any law which shall abridge the privileges or immunities of the citizens of the United States." He also claimed the right to manufacture beer for his own use as that was a privilege or immunity within the meaning of the constitution. The question is was this Kansas law prohibited by the constitution of the United States. The Court held in an able opinion by Mr. Justice Harlan, that it was not and was valid, because it was an exercise of police power, and that the states had never

parted with their police powers. Its police powers enabled a state to pass such laws as it deems wise to protect its citizens in their health, morals, property, safety, or peace; or to prevent illness, vice, disorder, debauchery, disease, pauperism, crime, misery; or to promote good order, education, refinement, ethical or moral culture. This was a law and the constitution of Kansas. It was submitted directly to and approved by the sovereign people of Kansas and they deemed it a wise policy to prevent the manufacture or sale or keeping for sale of liquors. If they had not voted on it directly but by their legislature had made it a law, to all intents and purposes it would have been upon the same basis, for that which a state's legislature does its people do. The Supreme Court of the United States considered the question and held that it could go no further after it was satisfied that the legislature and people had acted in good faith in this attempt to protect the morals of the people and that the act had a relation to the object in view. It held that it had no power to pass upon the wisdom of the policy, or to assume that the members of the court were wiser than the legislature or people of Kansas. It could not and would not set its judgment over against that of the people. Kansas was trying to remedy what the people considered an evil and the court would not say it was not an evil or pass upon the efficacy of the remedy. The people are supposed to investigate such matters, either directly or through their legislature, before passing a law. The courts cannot go back of their investigation, look up facts or take judicial notice of facts and declare that the people were not properly informed or that their action on that information should have been different. Having acted in good faith and provided that certain things should be done as a means to secure the safety, health and morals of society that was the end of the matter. They could, to that end, stop the manufacture of liquor, they could prevent its sale in the state, they could say the brewery was a nuisance and abate it as a nuisance. If the brewery property was not worth so much thereafter or was worth nothing, it was the misfortune of the owner, it could be sacrificed for the public good and without compensation to its owner. In that regard the state was unrestrained and could declare and order that defendant should not make beer for himself or another.

In the case of *Pumpelly v. Green Bay Co.* (13 Wall. 166), Wisconsin as a part of its system of improving waterways, had made a dam across a river which caused water to overflow plaintiff's land. The state did not take the land, but so covered it with water as to prevent its use as it had been used before. It was contended that the Kansas law preventing the use of the brewery as it was used before was a parallel case to the preventing the use of the overflowed land. And as

the court had compelled payment for the overflowed land so, also, should the court compel payment for this brewery property. True the facts were practically the same in that respect, but the difference arises in the *purpose* of the state in the two cases, in interfering with the use of the property. The land was overflowed and its use interfered with to improve Wisconsin's waterways and make them of greater value in commerce. The brewery was shut up and its use interfered with to improve or protect the morals of the people. The use of the land was interfered with under the state's power of eminent domain. The use of the brewery was interfered with under the state's power to police and protect society.

The health and morals and culture of the people are the foundation of society, the state promotes them under its police power which is necessarily a power always in any government and the state's power of police in that regard was never surrendered. Even against the express provisions of the constitution of the United States a state may exercise this power. To protect the public morals or the public health a state may do an act *prohibited* by the constitution. The Constitution of the United States expressly prohibits and says that: "No state shall . . . pass any . . . law impairing the obligation of contracts." But under its police power any state *may* pass laws "impairing the obligation of contracts" even if that state itself is a party to the contract. It was so held in *Stone v. Mississippi* (108 U. S. 814), where the state was allowed to revoke a charter to a lottery company granted by the state in consideration of a large sum of money; and it was so held (97 U. S. 659), where a fertilizer company had a contract authorizing it to locate at a certain place and to transport offensive and injurious material through the streets, without interference from a village whose charter also provided that it should not interfere with the transportation of this material. But the village, against the express terms of its own charter and against the express terms of the charter of the fertilizer company, passed an ordinance prohibiting the transportation of this offensive material through its streets and it was held a valid exercise of police power, although it violated the obligation of two contracts, although it destroyed the business of the company and the almost entire value of its property. Nothing could be a plainer holding that even the express prohibitions of the Federal Constitution do not apply to and restrain the state's police power even though that power be exercised so as to destroy a business or wipe out property values.

The Kansas law against the liquor business was held valid. Pennsylvania had a law prohibiting the manufacture or sale or keeping for sale of oleomargarine as Kansas prohibited the same as to liquors. The validity of the Pennsylvania statute

came in question in *Powell v. Pennsylvania* (127 U. S. 678), and was held constitutional, Mr. Justice Field dissenting. Powell had invested a large amount of money in his business, had a special plant suited to manufacture or use in that business only, had some oleomargarine on hand, his business produced a large income, the value of all of which would be destroyed if the law was executed. The declared purpose of the law was to protect the public health, to prevent fraud and to prevent adulteration of dairy products. Defendant offered to prove that he had made the oleomargarine by clean processes, out of pure ingredients, that it lacked only a percentage of butterine, having the same elements and in the same proportion as butter, that it was a nutritious food and as wholesome as pure butter. The court held that such proof was immaterial and the evidence was rejected. As the court would not allow the proof, it must assume, for the purpose of its decision, that the oleomargarine was clean, pure, nutritious food, as wholesome as butter and all things else claimed for it in the offered proof. It also appeared that butterine was increased by adding milk and cream and that those were the only dairy products in it that could be said to be adulterated. There was no deception in the sale, as it was plainly marked as oleomargarine. The court held that the statute was aimed at the business and that it was evident that the legislature, having tried previous laws had found that the entire suppression of the business was the best method to protect the public health. Here again the court refused to assume that its co-ordinate branch of the government had failed to inform itself, or that it had acted in bad faith. It must assume that the legislature's declared purpose to protect public health and morals was its real purpose.

To declare a law unconstitutional, the incompatibility of the constitution and the statute must be clear and palpable, and it must actually appear that the "legislation has no real or substantial relation" to the declared objects. "If all that can be said of this legislation is that it is unwise, or unnecessarily oppressive to those manufacturing or selling wholesome oleomargarine as an article of food, their appeal must be to the legislature, or to the ballot box, not to the judiciary. The latter cannot interfere without usurping powers committed to another department of government."

The dissenting opinion in *Powell v. Pennsylvania* seems to question the powers of appreciation and wisdom of the legislature, and also its gratitude to benefactors of the people. But those are irrelevant matters. Mr. Justice Field there uses these words: "Upon first impression one would suppose that it would be a matter for congratulation on the part of the state, that in the progress of science, a means had been discovered by which a new article of food could be produced equally healthy and nutritious with, and less expensive

than, one already existing, and for which it could be used as a substitute. Thanks and rewards would seem to be the natural return for such a discovery, and the increase of the article by the use of means hereby encouraged. But not so thought the Legislature of the Commonwealth of Pennsylvania."

This language and the whole dissenting opinion assumes that all oleomargarine is equally healthful or that laws could be made which would regulate the business so as to safeguard the public health just as well and leave defendant unmolested. But had the Supreme Court majority taken that view, it would have compared its own wisdom with that of the Legislature, a co-ordinate branch of the government whose duty it was to pass the laws, and found in favor of itself; or, if it had not made the comparison as to wisdom then it would be a comparison as to integrity of itself and the Legislature in which it again would find for itself.

The dissenting opinion is a strong argument as is that of the New York jurist who used the celebrated sentence on the same subject in which he said that those who could make a livelihood in the business "are deprived of that privilege, the capital invested in the business must be sacrificed, and such of the people of the state as cannot afford to buy dairy butter must eat their bread unbuttered." But this language and this argument, although of force, possibly unanswerable, is for the Legislature or for the voters to listen to and for them to heed. The courts cannot act upon it without usurping legislative power.

If our courts have authority to go back of legislation enacted under the police power, consider the facts upon which the Legislature acted, and inquire as to whether the Legislature's purpose will be accomplished by the law, they can take away the entire police power. For if this offered evidence as to purity and wholesomeness of this oleomargarine was competent and can be considered by the court, what is to hinder the brewer in the case of *Mugler v. Kansas* from forcing the court to accept evidence of experts who will testify that his beer was made from pure materials, by clean and wholesome processes, that it contained elements that were nutritious, and that public health was not endangered in anyway whatever, but on the contrary that the public health was fostered, and that as far as morals were concerned beer had no influence whatever, either one way or the other. Such witnesses could undoubtedly be had in numbers. Defendants who were fortunate enough to secure a jury of those persons would be freed while others, tried at the same term of court, by a jury of total abstainers, would be convicted. If these matters were opened for testimony and proof, witnesses could always be found with some plausible or fallacious theory who would testify that the public morals or health

were not endangered, and those most important objects of government might fail, it all depending upon the intelligence or ignorance or mere whims of the jury which defendants were able to secure. There are people who seem to believe and would testify that a lottery does not endanger morals, or that a certain kind of lottery is harmless, and they would have been available for the lottery case of *Stone v. Mississippi*. Others would say one could work in a fertilizer manufactory and live in robust health, and that transporting offal through the streets would not endanger health, and their testimony would be material in *Fertilizer Co. v. Hyde Park*. Others would say quarantine regulations are unnecessary and, that the germs of cholera or yellow fever could not be carried in a bale of cotton from Havana, and *that* long established regulation might be lost. Thus might the whole police power be taken from the states by so-called expert evidence when it is settled that the states *alone* have power to promote by legislation the health and morals of the people within the states. (*U. S. v. Boyer*, 85 Fed. Rep. 425).

We have considered cases as to oleomargarine and liquor where the question was as to regulations wholly within a state, but when the territory affected includes another state or a foreign country, the question is somewhat different. That different question appears and is discussed in the Iowa case of *Leisy v. Hardin* (135 U. S. 100). There a firm owned a brewery in Illinois and shipped beer to Iowa for sale in Iowa. One of the firm owned premises in Iowa where the firm kept beer for sale and sold it there through an agent. The keeping for sale and selling of this beer *in Iowa* was prohibited by the laws of Iowa. These laws were claimed to contravene the Interstate Commerce Clause of the Constitution of the United States, which gave to Congress the power to regulate commerce between the states. The central facts are that (1) the brewers lived in Illinois, (2) they shipped beer to Iowa for sale, (3) they occupied premises in Iowa, (4) and sold the beer on those premises.

The Iowa statute was recognized as valid so far as it applied to liquors made in the state; and valid as to liquors imported after they had been sold once and become a part of the property of the state, and it was also valid as to liquors imported, if the packages they were imported in were broken up before their sale. But it was held the packages imported could be sold in the form in which they were imported, and an enforcement of the statute against their sale would be and to that extent it was unconstitutional because it would be an attempted *regulation* of commerce between the states. This was the opinion of a majority of the court, but I think the weight of reason and logic and also of the decisions and authorities is with the minority. The statute did

not undertake to regulate commerce *between* the states, and it did not have that effect. It did not prohibit a citizen of another state from shipping liquor to Iowa or to any citizen of Iowa; it did not prohibit a citizen of Iowa from going to another state, buying liquor and returning with it or shipping it to his home. It did not prohibit an Iowan or a foreign citizen from making any sort of transaction in liquor he chose to make, by correspondence through the mails. It did not try to stop the manufacturing or sale of liquor except in Iowa. It did nothing whatever that affected the people outside of Iowa except that it stopped Iowa from being such a ready market for liquors, both domestic and foreign. All that the statute *did* prohibit was the manufacturing, or keeping for sale, or sale of liquor *in Iowa*. If the sale was made outside of Iowa, by or to a citizen of Iowa, the statute did not pretend to affect the transaction.

Now, in order for us to have interstate commerce, must there not be a transaction between parties who actually inhabit different states? Must it not be a transaction, a traffic, intercourse, a trade, a transportation or a contract, between a point or place or person situate in one state to a point or place or person situate in another state? A state and some other state or country must be involved before there can be a violation of the interstate commerce clause of the Constitution of the United States. Now, so far as this brewer is concerned he was doing business in Iowa, and for that purpose he was in Iowa in the person of his agent. The beer was being sold *in Iowa* by a person *in Iowa* to a person *in Iowa* at an establishment *in Iowa* maintained by an inhabitant of Iowa. The whole transaction of these sales and of all this business was accomplished within the bounds of the state of Iowa. The contracts of sale were begun there and ended there, and no one outside of the state had anything whatever to do with the sale. So that it should not have been a question of interstate commerce at all.

The opinion of Chief Justice Marshall in *Brown v. Maryland* (12 Wheat, 419), is cited in support of the prevailing opinion in *Leisy v. Hardin*, but the facts there were distinctly different, and the case is not an authority for the decision. In the first place the Maryland statute was not enacted under a police power or for a police purpose. It imposed a tax on the sale of imported goods where there was no tax on the sale of like domestic goods. It was a law to the prejudice of goods from foreign countries. It was a tax which the importer must pay before he could sell. It was a tax on interstate commerce that was not on local state commerce. The two cases are clearly distinguishable otherwise than as to the matter of police power and a police purpose.

In the Maryland case citizens of Maryland could sell their own goods, commerce in them within the state was recognized, but in the Iowa case

commerce in both domestic and foreign liquors was *prohibited*. The burdens on domestic and foreign goods were different in the Maryland case, but were exactly the same in the Iowa case. In the Maryland case it was a regulation applying only to imported goods; but in the Iowa case it applied to all liquors in the state. While the facts in the two cases may be contrasted for some value, the purpose of the two statutes furnish the greatest contrast for their legal bearing. The Maryland statute had for its object the collecting of a revenue at the expense of the foreign seller, the importer, or his domestic vendee, and to the advantage of the state treasury and all domestic dealers. These were all matters of mere *pecuniary* value to the people of Maryland. The Iowa statute, on the other hand, had no pecuniary object whatever, but its purpose was the protection of public health, public morals, safety and decency, the suppression of crime and pauperism. The Maryland statute was purposely altogether a *commercial regulation*, while the Iowa statute was purposely altogether a *police regulation*, and its commercial effect was merely and only incidental.

The case of *Schollenberger v. Pennsylvania* (171 U. S. 1), has the same facts and law presented with oleomargarine manufacture and sale prohibited instead of liquor. The principles which govern one case should govern the other. In my opinion, both of these laws should have been held valid, but both were declared unconstitutional with the same justices dissenting.

On August 8, 1890, Congress passed an act declaring that all liquors transported into a state or remaining there for use or sale should upon arrival be subject to the laws of such state enacted in exercise of police powers. A subsequent law applies to oleomargarine in the same way. These statutes have possibly removed the effect of the decision of *Leisy v. Hardin* as to the liquor and oleomargarine traffic. But as to other foods the constitutionality of laws of the states are still open to question as before. To try to overcome the effect of these decisions by a similar act of Congress applying to all foods as well as liquors and oleomargarine, it seems, might unsettle rather than settle the law. It might have the same effect as the 14th amendment which has given rise to interminable litigation on questions to which it does not apply and to which it was not intended to apply.

It seems that the interstate commerce clause is entirely saved and satisfied if it is permitted to apply, in police regulations only to transactions taking place between a point within and another without the state. So if a man in prohibition Iowa writes Leisy, the Peoria brewer, to send him a case of beer at a price and Leisy sends it, the offer is accepted and the contract and sale made at Peoria, outside of Iowa and that would be no violation of Iowa law and Iowa could not make

a law to prohibit such sale. This is the course of decisions in the state of New York under a statute requiring a foreign corporation doing business in that state to procure a certificate from the Secretary of State, authorizing it to do business there before it would be permitted to sue and recover on a contract made in New York. In such a suit, if it appear that an agent had secured an order in New York which was forwarded to the company's foreign office and there accepted, it is held that the contract and sale are made where the order is accepted and the statute does not apply. But if the agent instead of merely soliciting orders had there and then offered to sell the foreign company's goods and the offer had been accepted in New York, the contract was made there so that the statute did apply. *Cummer Lumber Co. v. Insurance Co.* (67 App. Div. 151; 173 New York, 633). In *Leisy v. Hardin* the brewers make the whole of their contracts of sale in Iowa and as to such sales it seems clear that the statute should have been held valid as not a regulation of interstate commerce.

As for what a state policy should be with regard to oleomargarine or other food laws it is not within the scope of this discussion to declare, but as a matter of law, I firmly believe that each state has the power and should be left to pursue whatever policy to promote health or morals, it deems wise in the manufacture of foods even to their entire suppression. The whole of the state's police power to regulate its internal affairs is still with it as much so and as great as it is with the British Parliament and the federal government has no power to police the internal affairs of a state. So that the state must regulate those affairs if they are regulated at all. If the state laws should work hardships the remedy is to be applied by the legislature or the people who cast the votes. It may necessitate campaigns of education, but it is the best way out of the difficulty.

It has been often said by Supreme Court justices in their opinions that the safety of our institutions depends upon the respect which the legislative, judicial and executive branches of the government show to each other and to the people. And it is with sublime admiration that we can look upon those learned jurists as they refuse to declare a law invalid unless it clearly appears to contravene a constitutional provision, leaving all matters of policy entirely with the legislatures or the people. They refuse to impeach the wisdom, or good faith, or integrity of the legislature or the people, and they do so notwithstanding the apparent lack of information which those bodies sometimes seem to show. They will not act on the assumption that their college or university training justifies an interference with the functions of a less favored body of men. To do otherwise would produce friction between the people and the Supreme Court. It is safer to have friction between the

people and their legislative bodies. The Supreme Court Justices hold office for life, and a discontented people could make no change in that court without interfering with the machinery of the government. However, they elect a new legislature about every two years, and they can change the sentiments of that body in the natural course of events and without interfering with any of the governmental machinery. As long as the people can easily change the laws governing them there can be no occasion for revolution. In order that they may exercise wisdom in making pure food laws it is incumbent upon you gentlemen of this congress, you food commissioners and food chemists to agitate and educate the people and legislators so that they may know whether or not oleomargarine or this or that other food is healthful or injurious. The only permanent governing power in any country is the people. In order that they may govern well they must be kept busy doing something as sovereigns.

Authorities pertinent to the above discussion are as follows:

Mulger v. Kansas, 123 U. S., 623; Powell v. Pennsylvania, 127 U. S., 678; Stone v. Mississippi, 108 U. S., 814; Schollenberger v. Pennsylvania, 171 U. S., 1; Brown v. Maryland, 12 Wheat, 419; Fertilizer Co. v. Hyde Park, 97 U. S., 659; Leisey v. Hardin, 135 U. S., 100; U. S. v. Boyer, 85 Fed. Rep., 425; In re Brosnahan, 18 Fed. Rep., 62; In re Thomas, 82 Fed. Rep., 304; Armour Packing Co. v. Snyder, 84 Fed. Rep., 136; In re Scheillin, 99 Fed. Rep., 272; U. S. v. Lavin, 101 Fed. Rep., 439; Story's Commentaries on the Constitution, Vol. 1, 21 and 46; C. E. Stevens' Origin of U. S. Constitution, 11, 12, 38, et seq.; Bryce American Commonwealth, Vol. 1, 300, et seq.; Thorp's Story of the Constitution, 26, et seq.

CHAIRMAN BAILEY: The next is an address on "National Food Laws and Inspection in the United States." In selecting someone to handle this subject we have chosen a man who is well known, not only all over the United States, but all over the civilized world, and I take pleasure in introducing to you Dr. H. W. Wiley, chief of the Bureau of Chemistry of the United States Department of Agriculture.

#### NATIONAL FOOD INSPECTION.

#### ADDRESS BY DR. H. W. WILEY.

MR. CHAIRMAN, LADIES AND GENTLEMEN:

The scope of the work of food inspection on the part of the federal government is well set forth in the circular which has been distributed throughout the audience, circular No. 16. It may be well, however, in a short time, to give you some additional idea of the nature and scope of the inspection here referred to.

The earliest account we have of any attempt on

the part of the federal government to inspect foods was in the passage of the act authorizing the inspection of teas imported into the United States. This was the first of the food inspections which the national government has attempted. Just why the effort should have begun on tea I do not know. Compared with other nations, especially England and Russia, we are not a tea-drinking people. I believe the amount of tea which is consumed in the United States does not exceed but very little one pound per head while in England and in Russia it is many times as great. We are a coffee-drinking people rather than a tea-drinking people, and it would have seemed more natural that the inspection should have begun with coffee than with tea. Nevertheless, this inspection has been in progress for many years and with very salutary effects. The teas which are imported into the United States are all inspected by a board appointed by the Secretary of the Treasury, and this board passes upon the character of the teas which are brought into this country. In connection with the most interesting and learned address to which we have just listened it may be of interest to know that the constitutionality of the tea inspection act has lately been questioned and the matter has been brought before the Supreme Court of the United States, because the act establishing the tea inspection provides that the Secretary of the Treasury shall fix standards of purity for tea, and all teas which are brought into this country are judged by those standards. The importers claimed that these standards were not just and that they excluded a great deal of genuine tea, not adulterated in any way, but tea which did not reach the standard of excellence which the Secretary of the Treasury prescribed. The matter was finally brought to the adjudication of the Supreme Court, which upheld the act of Congress by, I believe, a unanimous decision, and the right of Congress to delegate its authority in fixing standards of tea to the Secretary of the Treasury, which was one of the points contended to be illegal, one of the points made being that Congress had no right to delegate any of its authority to anybody else. The Supreme Court made a sweeping decision to the effect that the law, in the first place, was constitutional, and in the second place, that Congress had the authority to designate the establishment of standards of excellence to the Secretary of the Treasury, and the law was upheld in every respect, and court went further to state that no matter if it was genuine tea, that genuine tea which did not reach the standards of excellence which were set had no right to be imported into the United States under that act. So that every contention which was raised by the opponents of the law was set aside by the decision of the Supreme Court. This is a matter of considerable importance just at the

present time, because Congress has delegated a similar authority, as you know, to the Secretary of Agriculture, authority to fix standards of purity for food products, and should this authority ever be questioned in the courts, the sweeping decision of the Supreme Court, to which I have just alluded, will probably deter anyone from bringing an additional suit of a similar character against the Secretary of Agriculture. Now this decision of the Supreme Court does not take into consideration the justice of these standards at all. That was not the point which was considered. It simply establishes the right for the fixing of standards and does not prevent anyone from going into court on the other plan and claiming that the standards are not correct. That still is open to anyone who may desire to bring the matter to a judicial decision. But the fact as to the right to fix the standards has been established, and as soon as they are fixed no question of illegality can be brought as to the right or propriety of their establishment. I have said that this law had produced a salutary effect. I am not acquainted at all with the mechanism of its workings, but I am told by experts who are able to judge that the character of tea which is imported into this country has been materially improved by the establishment of this inspection. I do not know even what the qualifications of the inspectors are nor the character of the inspection which they make. I am only advised, however, that it is not a chemical inspection but wholly a physical one. It depends upon the brand of the tea and the character of the tea which is drawn from that, as judged by the board of inspectors to which I have already referred.

I will now for a few moments call your attention to other forms of food inspection exercised by the federal government. They are set forth briefly in this pamphlet, the text of the law being in each case given and the officials who are charged with the enforcement of the law are mentioned. I will refer first to the work of the United States Treasury in the Bureau of Internal Revenue. This division of the Treasury Department is charged with the inspection of food products, not in regard to their utility as foods, but to secure certain immunities from adulteration and to exact certain penalties for the manufacture of certain characters of foods. You are all familiar with the most of those acts. They are, first, the Excise Act, which lays a duty on fermented beverages or distilled spirits, then the well-known Oleomargarine Act, which has lately been amended and made more strenuous, the act relating to mixed flours, and the act relating to filled cheese. Now these acts are executed by the Bureau of Internal Revenue. Then there is an act which has a divided administration, in fact, a number of them, as I will show to you; the act in regard to the tax on renovated butter is jointly executed by

the Bureau of Internal Revenue, and by the Department of Agriculture through the Bureau of Animal Industry and the Dairy Division thereof. These acts are all ostensibly revenue measures, though really only the first one I mentioned, that is, the Excise Act, laying the tax on fermented beverages or distilled spirits, only that act is really a revenue producer. The revenues which are collected in the others are mostly for the purpose of inspection and to secure the proper inspection than they are for the purpose of raising revenues. In other words, the amount of revenue which is collected from the oleomargarine and mixed flour and filled cheese and renovated butter is a very small sum as compared with the amount of revenue, for instance, which is received from fermented beverages and distilled spirits. Nevertheless, the laying of this tax gives a most convenient means for the inspection of those products. Now under this inspection a certain degree of purity is obtained, because these bodies are made under the supervision of the agents of the internal revenue, and for that reason they are subjected to certain kinds of inspection to which they would not be subjected otherwise. For instance, the character and purity of the ingredients which enter into those bodies are ascertained, and more than that, the character of the product must be stamped upon the finished product so that anyone who may desire to know the character of the material which he is dealing in can simply ascertain it from the stamp which it contains. Thus, it is illegal to sell oleomargarine which is not properly stamped, or mixed flour, or filled cheese, so that the persons who consume those bodies are fully informed, if the law is properly carried out, and measures are taken that it shall be, as to the character of the foods which they consume. The result of this inspection and tax has been largely, I think, to eliminate from the list of foods at least two of those classes, namely, filled cheese and mixed flour. The amounts of those which are made, as ascertained by the returns to the Internal Revenue Department, are very small. The act, however, has not succeeded in preventing the manufacture of oleomargarine.

Now in regard to the other part of the internal revenue, the tax on fermented beverages and distilled spirits, there is a most excellent opportunity of securing the purity of the product, and one which I will explain in a few moments. In all these cases the materials of which the substances are made are declared, and if they are mixtures, the amount of each one in the mixture is set forth so that you can go into the Bureau of Internal Revenue and look at the books of any brewery or distillery in the United States and you can tell every pound of any kind of material which has entered into the products made in that brewery or distillery. For instance, if a brewer uses nothing but pure malt and hops it appears

so on the records. If he mixes any kind of barley or any kind of malt substitute, the amount and character of that substitute is recorded, so that the Commissioner of Internal Revenue has an absolute check, we might say, upon the nature of every one of those beverages which is manufactured in the United States, and thus the purity is ascertained. If not, the kind of adulteration is set forth, so that the honesty of the product is secured.

Now this is a great step, Mr. President, toward a proper inspection of food products, and it is made possible in this case, as I say, by the fact, of the application of the revenue, which is a high one, upon these manufactured bodies. In the case of distilled spirits this supervision extends until the manufactured articles are ready for consumption, because as you know, in the manufacture of distilled spirits the fresh product is not fit for consumption—I believe it is used in some of the mountain regions under the term of “mountain dew,” but the products which are made by the moonshiners are not particularly conducive to temperance. I believe the termination of life is usually hastened by the bullet in those regions. This product contains the crude oils, alcohols, which are known as fusel oils. Now, in the fermenting of a mash, not only is the ordinary alcohol of commerce produced, but a large number of other alcohols, some in minute proportions, and some like amyl and butyl alcohol in larger proportions. Now all these alcohols together, form a kind of substance when combined together, which is known as fusel oil. The term “fusel oil” means a collection of those higher alcohols which are produced in the fermentation of a mash. These alcohols, however, pass over with the water alcohol in the still. Some of them have higher boiling points, but they are carried over mechanically, so that they all appear in greater or less quantities in the product. Now, in order that this product be good for consumption it is necessary that it be stored in wood. In making pure alcohol by rectification, the other alcohols except the ethyl alcohol are removed, and we have then a pure ethyl alcohol which is known as the alcohol of commerce and is made in very large quantities in our neighboring state of Illinois, especially at Peoria, where the largest manufactories of alcohol in the world are situated. But there we get nothing but ethyl alcohol, which itself is not a beverage. It has not those qualities which recommend it as a beverage, and hence, except in exceptional cases, it is not used as a beverage. The aging process consists in the development of ethers and bouquets by storage in wood. The goods are placed in a bonded warehouse, that is, the maker of those goods is not required to pay the tax on them when they are made. The United States gives him a certain amount of

time, and justly so, because if he were compelled to pay the tax when they were made then he would be out good money and the interest it would bear during the whole aging process. The government says “you may put this in my bonded warehouse and I will take care of it for you and you can leave it there to the extreme limit of eight years”—that is the longest time it can be left in bond, and at the end of that time the tax must be paid. Now during this time the oxidization of various substances is going on; they are converted into aromatic ethers which give to the beverage its delightful odor and smell and taste, and you have the real whisky produced in this way. Now the law is very explicit. So long as this material remains in the charge of the United States the owner does not have access to it. He cannot tamper with it in any way. He can add nothing to it. He can take nothing from it. And the result is that when the tax is paid and it is turned over to the owner, it is, to all intents and purposes, exactly what it is represented to be: it is a genuine whisky. The same way with brandy, which is distilled and must be distilled from wine. It can also be placed in the bonded warehouse and aged in the same way. The same is true of brandy which is distilled from peaches and apples. So that the United States safeguards these materials, and when we get them with the stamp still upon them and we get them directly out of the bonded warehouse, we know exactly what we are getting and there is no mistake about it, whatever your opinion may be as to the wholesomeness of these products. That is quite a different thing. But the character of the product itself is guaranteed to you, and thus we have a real, genuine inspection and guarantee of purity from the United States itself on those bottles. Even when, in the manufacture of what we call sweet wines or fortified wines, which are not wines at all, but only liquors—in the manufacture of those the government still exercises its supervision and prescribes that no alcohol shall be used in the fortification of such wines, except genuine brandy distilled from wine. In this way we are sure, in the fortified wines which we get in this country, that the alcohol in there which we are drinking is alcohol derived from the grape, and that is more than we can say of the brandies imported from other countries where they do not have similar supervision. In this way, you see, the Bureau of Internal Revenue has very extensive supervision and inspection of our foods and drinks.

Now, again, the Bureau of Animal Industry has a very extensive inspection of foods in addition to that, in connection with the inspection of renovated butter. Under the law all meats which are intended for interstate or foreign commerce are inspected by experts of the Bureau of Animal Industry to determine whether or not the animals are diseased. This inspection is made before the

animals are slaughtered, and any animal which has any appearance of disease before slaughter is removed from the pen. But it does not stop there. After the slaughtering is done there is another inspection, a more accurate one, a more extensive one is made, in the matter of cattle, to see if there is any sign of pleuro-pneumonia or disease of that description, and in the case of swine, to inspect the carcass for the presence of trichinæ or any disease of that kind which may affect or destroy the life or health of the consumer. Now all the meats which are intended for interstate or foreign commerce are thus inspected by the Bureau of Animal Industry, this most wise and salutary measure assuring, so far as inspection of that kind can assure, to our own people and to the people of foreign countries, a wholesome product. You know, of course, the outcry which has been made against American meats in some of the foreign countries on the ground that it produced trichinæ. I am not speaking in any disrespectful way, but our German friends are very fond of eating ham raw, and it has a delicious flavor, when well cured, raw, and when you sit down to breakfast over in Germany they bring in a wooden plate and a piece of raw ham, and with that as the most delicate part of your breakfast you sometimes think that the prejudice against eating meat or fish raw is absurd, and prejudice it may or may not be; but that is not the case in other countries, and other countries are entitled to their taste just as well as we are. Now we had a very eminent expert spend several years in Germany for the express purpose of seeing just how far, if possible, he could trace the trichinæ diseases which are prevalent in that country to American pork. Of course, if trichinous pork is cooked the trichinæ are killed. It is only when it is eaten raw that it is dangerous, so that in this country trichinæ is almost unknown, while in Germany it is a very common disease, and he never in a single instance was able to trace, even with the help of the German authorities, any case of trichina in Germany to the American hog. In every instance he found it was due to pork of domestic origin.

Now this is largely secured by the rigid inspection, as rigid as can be made, to which I have just alluded. So that if you feel as if you wanted to eat your hams raw in this country you can do so with a great deal of safety if you eat the domestic product which has been properly inspected. Domestic hams which have not been inspected would be subject, of course, to a good deal of suspicion.

This shows in what ways the federal government has authority, almost without the people knowing it, to exercise this very wide supervision over the foods and drinks of the people, and not only our people, but all people to whom we send our agricultural products. We are not of the

opinion that we can send to foreign countries food which we deem unfit for our own families. We believe our duty extends not only to ourselves, but to the people of foreign countries to which we send our products.

Now I have first mentioned those lines of inspection with which the Bureau of Chemistry of the Department of Agriculture has nothing to do, in order to show you how extensive it is. Our own inspection is a very small one, I should say, compared to the general inspection to which I have referred. It extends only, so far as the official inspection of foods is concerned, to those of foreign origin. Congress has authorized the Secretary of Agriculture to inspect before entry all food products coming from foreign countries. Congress has not authorized the Secretary of Agriculture to inspect food products intended for interstate commerce, and I will explain to you briefly the character of the inspection which has been instituted. Under the law the character of the inspection of course is unlimited. Every food product of every description is subject to inspection, but we do not inspect at all those products otherwise provided for by law, that is, such as tea. We have not had any opportunity or time to inspect food products in their natural state, because their adulteration or sophistication are not likely to be expected. For instance, all bulk goods in the natural state, like tea and coffee and things in that condition, we have not inspected. We have confined our inspection to manufactured articles only, and to a very limited number of these, because Congress, while giving the authority, for some reason failed to give the funds, and therefore we could not carry out to the fullest extent the will of Congress. I suppose you find sometimes the same trouble with the state legislature. They are perfectly willing to give you authority to do things, but sometimes are not quite willing to give you the means of doing them with. A very good instance of that was shown last winter, when in the Senate of the United States an amendment was made to the Agricultural Bill authorizing and directing the Secretary of Agriculture to inspect food products in cold storage, and yet not a dollar was given for the work, which must of necessity be a very expensive one, and hence we can only do a very limited amount of work of that kind. The work of inspection is done with the help of the Secretary of the Treasury. The Secretary of the Treasury is the official who executes this law. The Secretary of Agriculture has nothing to do with the execution of the law at all. He simply certifies to the Secretary of the Treasury the invoice that he wishes to inspect, and the Secretary of the Treasury is authorized to take samples under directions which are prepared by the Secretary of Agriculture, of this invoice of goods. These samples are sent to the laboratory at

Washington, New York, or San Francisco, as the case may be, there now being three of these inspection laboratories established, and as soon as sufficient funds are granted by act of Congress we will establish others in other ports, but three are already in operation. There the goods are inspected. Now the law says that there are three classes of goods which are to be excluded from the United States under this inspection; one is, goods to which anything has been added which is deleterious to health, and that is a pretty broad proposition, to determine which are deleterious to health, and the most difficult of all the problems which we have to-day. The second provision is easy of execution but difficult to find proof on, namely, all food products which are misbranded in any respect in regard to the country of their origin or the contents of the package, and third all food products which are forbidden sale or entry into the country from which they came. This is based on the general principle that we recognize the right of foreign countries to establish food laws and we accept their regulations and their laws without question as applying to their own products and hence any food product coming from a foreign country where that food product is forbidden sale, is excluded from the United States. Now you can readily see the difficulty there is in the first proposition, to determine what is injurious to health. No construction is placed upon this by Congress. It is arbitrary with the Secretary of Agriculture, and yet there is no part of the law which the Secretary of Agriculture executes more carefully than that part where he is given absolute discretion and we seek in every possible way to find out, when substances are added to a body, whether they are injurious to health. We are guided largely by the decisions of the courts in this matter, and also by the opinions of the Attorney-General of the United States, because we submit all these acts to him with questions for him to answer, so that we may have some guide from the highest legal authority in the United States. We do not construe the law to mean that the food which is inspected must be of a nature and quantity which will injure the health of the person who consumes it; if we held that construction we could not exclude anything, because we could not tell whether it would hurt or not until we tried it, and then it would be too late; but we hold the law, as the courts hold it, to mean that if anything be added which in its nature tends to injure health, no matter what the quantity may be, it is a cause for exclusion on this ground; that it is not necessary in the preparation of foods that any such substances be used, and if they are of a nature which is injurious to health their use should be excluded, and to this end we consult the experience of eminent experts, or we conduct actual experimental determinations, which we consider the most definite way of settling this question, and

thus with all the light we can get we decide these questions.

Now in regard to the false labeling, that is easy, provided it can be settled by chemical examination. If we find that they have labeled it so and so and then on examination we find it contains something else, and only a part or none at all of the substance it is said to contain, that is an easy matter. For instance, suppose we had a package labeled "Brandy" and we found from our examination that it could not have been distilled from the grape, from the wine, and did not contain the constituents which brandy distilled from wine contains, we would then say it was falsely branded and was not brandy and therefore it would be excluded. But the question is different when it comes, for instance, to a wine. We may receive a wine which has a certain brand on it as having been made at a certain vineyard where the wine of the vineyard is famous and brings a high price, and this brand is on the bottle. We imagine from the invoice and other circumstances that this is not the wine it is intended to represent, but it is a genuine wine of the same type exactly as what it pretends to be and that the chemical examination proves. Even the taste of the expert wine taster is not always reliable, because he will frankly confess that the wine which is made at the same vineyard in different years has different flavors, and while he may pronounce this an inferior wine he is not prepared to say it was not made in some vintage of the vineyard claimed. In order to avoid this so far as possible, we shall require that hereafter every wine which bears a classed name, that is a name which it is entitled to bear under the laws of its country, to state on the label the year of the vintage, so that the characteristics of that vintage can be determined by the expert. Then if we think the wine is falsely labeled altogether, we require a certificate to accompany this wine from the one who made it. That is, if it is a classed wine, it must bear the certificate of the owner of the vineyard himself that he actually made this wine and sent it to so and so, and so and so's certificate must come with it to the final owner, and it must be certified that it has not been stretched or mixed or tampered with in any way. In this way we hope to secure absolute freedom from that very common method of adulteration, the misbranding of imported wines. It has been carried on to an enormous extent heretofore, and I think by this rigid inspection we will relieve our people from this form of deceit and fraud. We do not know even that we can do it by the most rigorous inspection that we can inaugurate, but at least we shall do the best we can.

Now the same is true of other imported food products. I will give you an illustration about the importation of jams and jellies and marmalades which we get in large quantities from England. Now we find in many cases that these con-

tain preservatives which we deem injurious to health, not that we would say the amount of preservative in any one package was injurious to health, but that the preservative itself is an injurious substance and thus would be excluded under the law. Now it happened that all these goods were manufactured, all the trade contracts were made and everything of that kind before the people over there knew of the existence of this law, and therefore it does not look just that they should be deprived of the privilege of importation, so we are satisfying ourselves at present with requiring a re-labeling of those preparations, "Preserved with salicylic acid, or benzoic acid," or whatever the case may be. These people promise faithfully, however, not to use these substances any longer, although over there they seem to be perfectly willing to eat them, and after this year I do not think we will receive any more of those goods in this country.

Another thing which we believe is commonly misbranded and which we are using quite largely in this country now, is that famous beverage Scotch Whiskey, which is used so extensively in the United States, the whiskey with the smoky odor, a very popular whiskey with clubs and restaurants and high grade hotels. Now we read in the report of the Commissioner of Internal Revenue for Great Britain last year that there was consumed in Great Britain during the fiscal year thirty-two million gallons of what they call "spirits." All things are classed as spirits, such as brandy, whiskey, etc., which are consumed as beverages, and of those thirty-two million gallons it is said, by a writer in the *Freeman's Journal*, that there enter into the composition of it twenty-four million gallons of what is known in England as "silent spirits," that is, what we know as pure alcohol, neutral spirits or cologne spirits. In England they call it silent spirits. Of the thirty-two million gallons of spirits consumed by England, twenty-four million gallons of it were therefore silent spirits. Now we do not believe that when they export to this country they are any more particular, so that we think at least two-thirds, maybe three-fourths of the so-called Scotch whiskies may be composed in part of silent spirits made from the potato or other sources. This is a matter for investigation. We do not deny anybody the right to make and sell goods of that kind. It certainly is an inalienable right of anybody to do anything of that kind. It is not in any sense a violation of any propriety except when it is sold under a wrong name, and we ask simply that these packages of imported spirits bear a label stating what they are. We are not prepared to declare, and I believe nobody is, that these compounded spirits are altogether unwholesome, because we know the effects which ethyl spirits have upon mankind. We know ethyl alcohol

itself is a violent poison when taken in sufficient quantities, and the fusel alcohols are supposed to be even more violent poisons than ethyl alcohol, and so we insist simply upon the standard of common honesty and fairness in labeling. Now our foreign friends for the most part are perfectly well satisfied with the steps which we have taken. I was told just a short time ago by Mr. Calvet, who represents an important firm of wine merchants in Bordeaux, a very large firm, that he heartily believed in this attempt which we are making to secure a guarantee of purity in classed wines, just as in this country when I import a fine animal I must bring with that animal a pedigree, so that we say when you import a wine you shall bring with it a pedigree, and Calvet says amen to that proposition. He believes it will be as fair and as great a benefit to France as it will be to this country. So we say to the importer of Scotch whiskey, if you have got an old-fashioned Scotch whiskey, bring your pedigree; if you have got an imitation, frankly say so and we will not prevent the importation of it. Now the old whiskey we know was made from the fermentation of barley malt, and the custom was in the old days to dry this in the loft and to burn peat to furnish the heat, and the steam and odors arising from the peat impregnated the barley and gave the smoky effect to the whiskey. Now we contend that that is the genuine Scotch whiskey, and that it is entitled to be imported under that name.

Now in the case of olive oil, we had great trouble at first with that because we found about twenty per cent of all we inspected at first to be mixed with other oils and the other eighty per cent were genuine, and that was not fair to the makers of the genuine oil, because they were competing with the people who were selling only an adulterated pure oil, but at the present time, I doubt if you will find a single cargo of adulterated olive oil imported into the United States. We have not found a single one in the past few months and it seems to have entirely ceased. We did find a curious case a few weeks ago of oil offered for importation which bore the label, "Guaranteed to be made from finest selected California olives," and bearing the name of some fictitious mission in California, and this was consigned to San Francisco, the object being to sell it at California prices, because the prices which California oil brings in the market are higher than those of the imported article, so they had to imitate a California label and place it upon a foreign oil which was pure enough, no objection to it at all, with the idea of getting a better price for it in the United States. Of course, under the law, this importation was not allowed to pass. Now just a moment more and I will stop. Now as to how the law is executed, I have told you the Secretary of Agriculture has nothing to do with

the execution of the law. If the Secretary of Agriculture finds that the law has been violated in his opinion, he certifies that fact to the Secretary of the Treasury and the Secretary of the Treasury notifies the importer to send that invoice beyond the jurisdiction of the United States. It has never really been in the jurisdiction of the United States, but he forbids him to bring it into the jurisdiction of the United States. The importer is simply notified that within ninety days it must be removed, and if at the end of ninety days it has not been removed then the Secretary of the Treasury destroys it under the law. That is an old law which has been in existence quite a while, the one relating to destruction, so the Secretary of the Treasury simply notifies the importer that the goods cannot be entered, and he makes such disposition of them as he sees fit. We have had one or two curious cases arising under this because, for instance, the German law, and I think it is a pretty wise one and have no criticism to make on it; some of our packers and meat dealers don't like it, but I think it is a pretty good law on the whole, and it is based on this idea: that in the case of sausage or comminuted meat the German inspector is not able to tell whether or not it contains any substance injurious to health, or the character of the animal from which it was made, hence the German law forbids the importation into Germany of any piece of meat of less than eight pounds, which, of course, excludes ordinary canned meats, sausage and so forth. Now we are not quite so severe with the German meat as we might be, because the law would enable us to apply the same principle to them, but we want to treat them all alike. When we inspect these substances and find they contain anything injurious to health, or that they are made of any material which we think improper, they are not allowed to enter. In several cases these invoices have been sent back to Germany, but when they reached home under the law they were not allowed to enter, hence they were like the man without a country, and the Germans had to seek other markets for them, because they would not let them bring their own goods back into their own country when they were refused entry here. This is one of the ludicrous sides of the food inspection. There has never been any suit brought to prevent the Secretary of the Treasury from requiring the re-export of these bodies, and I don't believe there ever will be. We have not invoked the aid of the courts and will not, unless, of course, someone questions the justice of our decisions, but the merely moral effect of the existence of this law has had a most salutary effect. The people who are making foods in Europe are writing to us to know how they can make them to conform to our law, and we write back, "Make them honestly what they are; if you will do that you will be

sure to have admission without question, but don't try to deceive us. Don't put into the food anything which nature has not put in there without specifying it on the label; don't put in anything which you believe or we believe is injurious to health; don't put any label on the packages which is false in regard to the country in which it is made or from which it is exported, and don't send to us anything which you will not eat at home."

#### HON. A. H. JONES IN THE CHAIR.

CHAIRMAN JONES: Ladies and Gentlemen of the Food Congress: I want to congratulate you on the part of our president, on the excellence of this program. We have a program here that will be edifying all the way through. We have just heard the able address of Dr. Wiley; we all know what he has done and what he is doing, and especially those who have been connected with the legislative part of this association. We know that he is not only doing his work well, but enthusiastically, and that he has done more for the cause of pure food than has been done, we might say, in centuries before. Those who have visited Washington know that and know it well.

Now we have with us another champion of the cause of pure food. We all know that the food products of this country and the cause of pure food cannot prosper unless we have the press back of us, the great magazines and journals that are engaged in writing up and looking after the cause of pure food. We have with us this afternoon one who has spent years in that kind of work and I have no doubt but that you will give him a respectful hearing, for he is worthy of it. I now introduce to you Mr. F. W. Barrett, editor of the *American Grocer*, of New York City, whose address will be "Publicity for Food Frauds."

MR. BARRETT: Preliminary to the prepared paper which I have, I want to say that I feel very glad that I came 1,500 miles to attend this conference, if for no other reason than to listen to the clear bugle note which Mr. Allen gave in this convention in his paper which he read this morning, which I regard as one of the ablest contributions to the literature on the subject of foods to which I have ever listened or ever read. Mr. Allen made this remark: "We are here to co-operate and not to fight." There was an old fellow down on Water street, who was in the habit of speculating, who said that if a bull and a bear had to ride together in the same wagon for a long distance they were very apt to come to terms before they got to the end of their journey. Now the manufacturers and distributors of food and the food commissioners are in that position; they have to ride together in the same wagon, and they want to

come to terms. They want to co-operate and not fight. President Bailey is reported in the press this morning, and I think it is correct, as saying that like every idea, the pure food movement was at first thought to be merely a fad and hailed as a farce. No more mistaken sentiment than that has ever been uttered. The pure food movement was born in travail; it was the outcry of the merchant's common honesty, as Dr. Wiley emphasized yesterday. I have prepared something on that subject which I am going to cut out of my paper and ask leave to have it printed, but I merely want to say here that the pure food movement inaugurated by Mr. Henry C. Meyer of New York, the editor of the *Sanitary Engineer*, who secured the co-operation and the money of some of the leading manufacturers, importers and distributors of food in the United States, and as the result of that movement the first food law that was ever framed went on the statute books of the state of New York, and the state of New Jersey, and other states have copied the main provisions of their laws from those laws.

I want to say here that when this subject was assigned to me, on consultation with some of the leading spirits in this movement, they suggested that I present the idea of the trade, and I want to say here, to avoid any discussion afterward, that in the remarks I make I am merely presenting the majority sentiment of the food manufacturers and importers of the United States as the result of an extended correspondence which I have carried on in the past two months with parties all over the United States representing all manner of interests, even the glucose interests, condensed milk companies, baking powder companies, sugar refining companies and the largest wholesale and retail distributors and as the consensus of their opinions I am reading this paper.

#### ADDRESS OF MR. F. N. BARRETT.

We all recognize as a marked and creditable feature of the past fifty years the effort of civilized nations to regulate by law, sanitary and other conditions affecting the physical welfare of the race, in order to add to the comfort of living and promote longevity. Included in this effort is the regulation by law of the food supply, commonly designated the Pure Food movement. Mr. W. D. Bigelow, of Washington, D. C., in an address before the Washington Chemical Society in 1898, noted the development of pure food legislation, and to which I refer those desirous of knowing its earliest history. At that time Mr. Bigelow said:

"The foods and food stuffs of the most civilized people of early historic times were few and simple as compared with ours. They had no mar-

ket filled with all manner of foods in an advanced state of preparation. The food materials they sold and bought were mainly raw and crude, and their preparation for use was a duty of members or servants of the family. They had neither potted meats nor canned vegetables. When there were 'two women grinding at the mill' the meal was made of such grain as the householder furnished. Spices came to them unground and with none of their virtue extracted. The list of fine family groceries was a very short one. Our far-away forbears lived closer to nature and knew less of art than we. Food adulteration as a great evil follows manufacturers and commerce, and flourishes in the train of a broadening civilization. A disposition to defraud was not wanting to the ancients, but skill to invent and large opportunity to apply are modern."

And while adulteration exists, and is widespread, it practically has no standing before the tribunal of public opinion as a sanitary question. No man whose life work is connected with the manufacture and distribution of food could obtain and hold a profitable or creditable position in the commercial world who manufactured and sold unwholesome products. Adulteration is largely a matter of lessening cost, in order that an extensive line of low-priced yet wholesome products may be consumed. An extreme technical application of the word to such products too often creates unwarranted suspicion as to their wholesomeness.

The entire question might be summed up in a very few sentences, as the kernel of the entire matter is that the consumer shall be made acquainted with the true character of the food and drink offered for sale. As, however, we have come together for mutual profit and, as I take it, to promote unity of action along the line of legal control of the food industry, it seems necessary to define somewhat in detail the attitude of the trade toward food laws as at present administered: keeping in mind that the greatest force for progress is intelligent criticism.

I feel safe in stating that there is not an honest individual connected with the food industry who is not in favor of prohibiting the manufacture and sale of unwholesome food products, and the same may be said of a majority of those who seek to thrive by fraud.

The trade is a unit in favor of an honest label, one which defines to the consumer the true character of the article it covers, without disclosing formulas nor infringing rights which are guaranteed by patent or trade-mark; and shall we say in such instances "where ignorance is bliss 'tis folly to be wise?"

There is a minority that claims that when once a food product is admitted to be pure and wholesome, it should not come under the jurisdiction of a food law and should be rated as any other ar-

ticle of merchandise. And also that when a food law undertakes to protect the people from fraud and deception it is going beyond the question of pure food. This position is untenable, as food affects the physical well being of individuals and the State, which is not the case with other sorts of merchandise.

The claim is made that no food law can be wholly just and equitable.

1. If it does not impartially recognize the RIGHTS of every class affected.

2. If it is not impartially administered and in a manner consistent with the purpose for which it was framed, viz., not only to protect the consumer, but the honest dealer, whether a manufacturer, importer or distributor.

The opinion is entertained by large and important interests identified with the food industry that in all the special State laws now in force, and in all the national laws that have been proposed, in the ways provided for administration and in the official acts of those entrusted with administration, equity is flagrantly violated in that the rights of the seller are treated as secondary to, instead of co-equal with, the rights of the purchaser. No other assumption satisfactorily explains the fact that most of the antagonism to existing food laws and the criticism of the methods employed in administration come from the manufacturers and distributors. This would hardly be if their RIGHTS as a class were not to a really serious extent abridged or encroached upon. Their argument is that the rights of the consumer involved in pure food laws are simple and easily defined. They are (1) the right to a market free from articles obnoxious to health and (2) the right to know the character of the thing purchased, in order that he may fairly judge its actual worth. These rights demand, in the first instance, laws that positively PROHIBIT, and the second instance laws that CONTROL, or REGULATE.

It is also believed that legal protection or supervision of the rights of manufacturers and distributors is in no way prejudicial to or infringes the right of the consumers. The food industry claim:

1. The right to manufacture and sell any article that is fit for food.

This right is by no means encroached upon by laws which prohibit the use of harmful or unsanitary ingredients in food products, or which provide for the sanitary inspection of stores and factories or prescribe the grade of tin plate to be used in the manufacture of cans designed to preserve food, or which require foods to be labeled so as to give the consumer fair warning as to their character, as "compound," "imitation," "artificial" and "adulterated," as opposed to "straight," "real," "natural" and "pure"; but it is interfered with when the laws require the man-

ufacturer to disclose his private formularies or to describe the composition of an article marketed under an inventive name like "Tryphosa," "Bromangelon," etc., which conveys no information as to the ingredients used.

2. The right to make his product attractive to the eye.

While attractive looks neither add to nor take away from the intrinsic food value of a product, they do to a considerable extent add to the pleasure derived from eating it. The right of the housewife to employ artificial devices to increase the attractiveness of her pastry, preserves, etc., is conceded. Why should it be denied to the manufacturer, always provided, of course, that his devices are equally innocent and that due notice is given of their use?

Some States forbid artificial coloring. In others there have been extreme literal interpretations of the law in the case of artificially colored food, even where the coloring is harmless. Commissioners rule against it in one class of food and permit its use in another, and it is this inconsistency of rulings and extreme legal interpretation that injures the rights of the trade. That great political force, the dairymen, are permitted to artificially color their butter, using annatto, carrot juice or other articles without restriction, while the maker of oleo is forbidden to color his product without a liability to a heavy tax. The rule regarding coloring matter ought to be as binding on the butter maker as the manufacturer of any wholesome product which is given a color in order to please the eye, the janitor to the palate.

It is fair to state that the trade is divided in sentiment as to the use of a foreign coloring substance to restore the original color when lost in the process of manufacture. Some manufacturers believe that the law should permit the replacing of lost color whenever this can be done without injury to the user, but this permission should not extend to permitting deception, such as the dressing up of an inferior article to resemble a superior. Some argue that the consumer is not prejudiced because the color of the preserved fruit or vegetable is not identical with the color of the natural fruit. Housekeepers know that color is lost in preserving these articles and therefore do not expect the factory to do what they could not think of doing. Banners of silk or cotton may be dyed from the artificial coloring found in jams, jellies, preserves and catsups, but equally good results may be obtained by dyeing them in natural food juices. The exhibit creates a false impression. Common law and common sense are two factors that, put into force, will check the bulk of unwholesome food adulteration.

3. The right in preparing foods of every class to make them as serviceable as possible.

The introduction of dessicators in salt, baking powder, et al.; of diluents in articles that would otherwise have to be diluted in the kitchen prior to use; of preservatives for the purpose of keeping articles which, like catsup, are slowly consumed, but which are liable to spoil soon after the original package is broken. These are devices wholly consistent with the right defined, and the law overreaches when the means by which the greater serviceability is accomplished are regarded as adulterations per se.

4. The right to employ original methods or agents in preparing, curing and preserving foods.

There is absolutely no warrant, either in fact or theory, for the assumption tacitly expressed in the phraseology of most pure food laws that the housewife in her empirical and unscientific way has so completely exhausted nature's resources as to make it not only improbable, but impossible for the trained experimental chemists to devise new methods or discover new preserving agents.

This is no defense of salicylic acid, benzoates, sulphites, saccharin or borax, the status of which from a health standpoint may still be a matter of controversy. It is an open question, however, whether or not some of these preservatives are any more, if as poisonous or inimical, to health in the quantities in which they are found effective than are salt, saltpeter, essential oils of spices, vinegar or wood smoke.

At any rate, the law transgresses on the manufacturer's rights when it forbids him to employ any other than the time-honored preservatives expressly specified; for it is within the bounds of possibility that experimental chemistry may yet discover a series of preservatives less harmful even than those the law permits.

5. The right of the distributor (wholesale or retail) to conceal his source of supply.

We cannot at this moment recall any State law which ignores this right; but laws have been proposed requiring food products to be labeled with the name of the actual packer and the place where packed. We grant that the law has the right to demand a sponsor, but if the distributor is willing to assume that responsibility and to that end imprints his name and address on the package, the law has no right to force him to disclose what to him may be a valuable trade secret.

The manufacturing and distributing merchant possess other rights besides those enumerated here, but they are so subtle in their nature as to be almost incapable of clear and comprehensive definition. They concern the law less than they do the administration of the law. When reputable business men chafe under the operations of the

law or when—this happens most—they charge officials with unnecessary severity, persecution, and even fraud, there certainly is *prima facie* evidence of a trampled right of one sort or another, easy to recognize even if hard to define.

A fundamental principle is that every consumer is entitled to an opportunity to choose as to the kind and quality of the food offered for sale. For example, whether they shall receive honey when desiring to purchase that article, or a mixture of honey and glucose; absolutely pure red currant jelly or an apple jelly with currant flavor or some questionable imitation; colored or uncolored catsup, high-grade or low-grade spices. In food where an antiseptic is used merely to maintain quality under all conditions of climate and handling and in quantities so small as to practically nullify its properties when used by itself, the authorities could permit its unrestricted sale under the proviso quoted. This prompts the query: Are preservatives as used in any sense a preservative? Have they any force that can be active or powerful enough to impair digestion or in the slightest degree affect the system?

Where salicylic acid is present in natural fruits to the extent of 0.24 to 0.57 mgrs. per kilo, it simply means that one part of salicylic acid is found in 4,166,666 to 1,754,386 parts, or, in other words, one grain in approximately 600 or 750 pounds. Scarcely more, if as much, is artificially introduced, in prepared food products. And when we consider that a tablespoonful more or less of the article containing it is used in connection with a large quantity of other food and drink at a meal, we must admit that there is not the remotest possibility of injury, nor that it is worthy the notice of any food commissioner beyond regulations to guard against an excessive use of a questionable antiseptic.

When the ratio is small, say 1 part in 50,000, it can no longer be regarded as a preservative under such conditions.

The English law provides that it is not an offense to sell goods where any matter or ingredient not injurious to health has been added to the food or drug because the same is required for the production or preparation thereof as an article of commerce, in a state fit for carriage or consumption, and not fraudulently to increase the bulk, weight or measure of the food or drug, or conceal the unfair quality thereof.

The trade wants to avoid covert attacks upon the integrity of their product through some technical interpretation of a defective or experimental law, or as the result of theory and where positive knowledge is unobtainable. Neither do they want such publicity given to the attack that it practically discredits their product. And that brings us to

## PUBLICITY

As a safeguard, insuring the people against fraud in connection with the manufacture and sale of food products.

Is not publicity an active factor in competition? Cannot it be trusted, to a large degree, to protect the consumer? Is not the war of rivals in business constant and aggressive and always in the interest of the people? And should not the effort of administrators of food laws be directed toward increasing confidence in their food supply rather than arousing suspicion as to its integrity?

The proportion of adulterated food to the total food supply is a bagatelle. It probably does not amount to over 1 to 2 per cent of the total consumed. The nation's main articles of diet average of high quality. The flour, butter, sugar, tea and coffee is free from suspicion. And even if we admit that preserved foods so extensively consumed are to some extent open to criticism, still, bulk for bulk, there is far less danger in their use than in fresh articles of similar sort as ordinarily bought in open market. I emphasize the declaration that as a sanitary problem food adulteration has no standing. Never before have the people had so generous a dietary and of such average high quality. All the fuss and furore about adulteration whirls around articles that are not really foods, but condiments, relishes, sauces, appetizers, palate ticklers or food accessories, such as baking powder, which is in no sense a food. About cat-sups and sauces, mere appetizers, nowhere near such a menace to health as the seductive cocktail. And the total traffic in all these things combined is not equal to the cost of the nation's flour bill for three months.

## RESPONSIBILITY.

Responsibility. All are agreed that it must rest somewhere. Many of the officials claim, in fact, insist, that it should rest upon the retail distributor; but a large part of the retail trade demand that it shall rest upon the manufacturer or whoever is responsible for the illegal goods. It seems right that the distributor to the consumer should share responsibility to a degree that will cause him to keep posted as to food laws and the quality of the goods he sells. And for that reason and in obedience to the desire of the food distributing trade the guarantee clause of the McCumber-Hepburn bill was made part of that measure. The illegal goods of a non-resident manufacturer can be shut out of the State, which certainly ought to be interested in increasing public confidence in the integrity and efficiency of the army of people engaged in the lawful and honorable service of meeting requirements for food, instead of being marched to court by the score as criminals and their offense made the text for official bulletins and articles for the press, all designed to magnify the work of one man at the expense of the repu-

tation and means of thousands of his fellow citizens. I have never discovered any section in any food law authorizing the establishment of a press bureau to discredit the honest, hard-working citizens of the State!

The trade is practically a unit in favor of the establishment of a United States standard—a difficult matter. It seems a pity that honest men found selling an article that is natural and absolutely pure, as in the case of milk, should be liable to criminal prosecution because through poor pasturage, or some climatic condition, his milk falls one-half of one per cent below the established standard for milk fat.

It seems unfair to allow a mixer of syrups to sell an adulterated article as pure and at the same time declare illegal pure cane syrup, because the ash in the pure syrup is more than required by the standard, while the adulterated article has less.

The establishment of an official standard for baking powder is regarded impracticable as it would result in giving a clean bill of quality to powders regarded unwholesome. As the arguments pro and con have been set forth by the manufacturers, it is unnecessary to discuss the question now.

We may safely trust this matter to the Board of Official Chemists, provided they co-operate with the body of commercial chemists and the manufacturers to fix equitable standards.

A majority of the men in the canned goods trade favor pure food laws.

Their position is defined by one of the oldest and largest preservers in America, who says: "We decided a long time ago that nothing at all should enter our products which could be pronounced by any commission as being adulterated."

"On the whole, we are positively opposed to the adulteration of any kind of canned goods, either for the sake of preserving them or to make them attractive to the eye. Goods properly preserved need no boracic acid, soda, or other preservatives, at the same time we esteem it to be dead wrong for a chemist finding some salicylic acid, for instance, in a packer's goods, to condemn said goods as being adulterated, when this acid, so far as we are able to find, is bound to arise in some fruits and vegetables, just exactly as the processing of pineapples or peaches, or any other fruit, in water, brings out the invert sugar contained in the fruit, so will the processing demonstrate a trace of salicylic acid, over which the packer has no control whatever.

"We are believers in pure food. We have nailed our colors to the mast. We pack pure food, and do not care where our goods are shipped, nor who examines them. We prefer our position, when we say that not an ounce of saccharin or patent sweetening or any coloring matter or preservative

enters into the packing of our goods, so that if any acid is discovered which may have the appearance of being put into the cans to preserve the fruit, we can say it is the natural result of processing the goods, and over this we have absolutely no control."

And yet the product of these men of irreproachable character has been assailed as containing chemicals, when, if present, they were there through some natural or legitimate cause. In one case the Food Commissioner claimed the presence of formaldehyde, when, as a matter of fact, no such substance had ever been put in the can, and this assertion was supported under oath. In one instance a packer sent two cans of goods to a food commissioner, one containing twice as much saccharin as the other. The one having the double quantity was detected; the other was said to contain sugar and was legal. There is no end of such testimony.

The canned goods trade would welcome a law regulating the quality of tin plate to be used in the manufacture of tin cans, and also a law regulating all receptacles so as to insure the consumer honest quantity; so that a so-called 8-ounce bottle should contain eight ounces and not five; that a gallon tin should hold a gallon and not several ounces short.

It is evident that every honest man favors honest food; an honest label. They want no more, no less than what President Roosevelt assured the old companion in arms, when he asked him what message he should carry organized labor. The President, quick as a flash, replied: "Tell them they will get a square deal; that organized labor will get a square deal; and that capital will get a square deal, if I have the say." That is all the honest manufacturers, importers, distributors of food demand—a square deal for each and every interest; a square deal for the people and no quarter for the food commissioner who uses his power to promote political aspirations of his own or his party associates, or as a means for graft.

You heard Dr. Wiley a few moments ago allude to the difficulty of getting appropriations for carrying out the laws. The late Dr. Edison was given to saying that in New York we had plenty of shot, but no powder, and I believe if the government of the United States and the legislatures of the different states were more liberal in their appropriations to the commissioner there would be a great deal more effective and better and more reliable work done in the official laboratories than there is done today, but there is no limit to the expense that a private laboratory will go to in order to secure the highest talent in the world.

CHAIRMAN JONES: We have listened to the very able address of Mr. Barrett. We have

here, as was stated to you by the president, all interests of the food product, the manufacturers, the editors of the magazines and the various food journals as well as the commissioners and their assistants. We believe that this subject is so broad that we can hear all sides of it and are ready and willing to hear it, and as commissioners we believe that these laws should be honestly enforced.

We have with us another editor this afternoon, and I take pleasure in introducing him to this convention. He has done much to make this convention a success, Mr. Paul Pierce, the editor of *What to Eat*.

#### ADDRESS BY MR. PAUL PIERCE.

##### PUBLICITY FOR FOOD FRAUDS.

It was very generous of your committee to give me this opportunity of addressing you. It is an honor that I appreciate very much, and if I am fortunate enough to add one thought that may prove of some value to this cause, I will be greatly pleased.

The movement against food adulteration and false labeling is a movement that has its animating purpose in a common interest and desire to protect the consumer from that which is injurious to his health and deprives him of the nutrition which he has a right to expect from that which he puts into his stomach. Claiming no special knowledge of the food subject from a technical point of view, I nevertheless wish to be considered as a zealous toiler in the ranks of those who are working for legislation to stop the manufacture and sale of deleterious food products.

As publisher of a food magazine, I trust I am a humble instrument in the work of disseminating among the people the knowledge that is necessary to put them on their guard against fraudulent food products and which is calculated to create a public sentiment which will ultimately demand drastic and practical pure food legislation.

A better title for this paper perhaps would have been "Publicity for the Magnificent Work of the United States Department of Agriculture and the Various State Dairy and Food Departments." Such publicity showing the people the workings of these various departments, the investigations they have made, the recommendations they have to offer, would be the most damaging publicity to food frauds. The bulletins of the Department of Agriculture, and your State Food Commissions are making it more and more difficult for the manufacturer to market food frauds, and the manufacturers of deleterious products are finding it more and more to their interest to put honest foods on the market.

A word as to the annual publication of your association: The premier contribution to the literature of Pure Food is this book just published un-

der the personal direction of your National Association of State Dairy and Food Departments of the United States.

It is hardly possible to overestimate the value of this book to the Food Commissioners of the various States and to all organizations and societies that are interested in the Pure Food movement. Its Supreme Court decisions and its digest of food laws of all the States and Territories brought down to 1904, make it almost indispensable in the various litigations growing out of the enforcement of existing laws. The compilation of the book bears the impress of much pains-taking care and evidence the wide familiarity of its editor with the whole subject of food legislation. It is already widely used and quoted in the courts and its value as a reference book to all those who have occasion to refer to the progress of the Pure Food campaign must increase as the years go by.

No greater question is before the people to-day than this question of pure and honest food for the masses.

It is far past dispute or query that of all important things and conditions co-existing with the world human life is the infinitely valuable. The human creature instinctively knows in his earlier years that he requires air and food for the continuance of his being. When he attains mature years, during which he is supposed to mix ordinary judgment and a degree of wisdom with his mode of life, he comprehends that pure food, as well as pure air, is an absolute necessity to a superior mental and physical development. During the last decade, this individual understanding of qualifying and limiting life through the nature of food, has developed into a public conviction that vitiated food is a contaminating plague, and often as much a poison as the liquid in a bottle on which the druggist pastes a label of ghastly caution. Every little while a story is told in the public prints about the almost fatal illness of a family on account of having eaten poisonous food. Occasionally a member of the family does not recover from the illness. This story is so frequent that every day the public demand for protection against these fatal foods is growing, and is more and more emphatically expressed. The method of this protection is now a vital obligation for every community to consider as its own means of self-preservation.

It is a discreditable commentary upon our intelligence and our civilization that more attention is paid to the outer man than to the inner man. We give much thought to and spare no expense upon our raiment, loading our minds with tedious details of style and appearance practicing a slavish regard for the edicts of the fashion plate, while pouring all kinds of adulterated and poorly cooked stuff into our stomachs.

According to Mr. James H. Shepard, one of the

ablest chemists connected with your association, the unconscious and unwilling consumer gets thirty-five doses of chemicals and colors per day, or over fourteen thousand doses in a year.

If a thing is good in itself and made of pure materials, the consumer doesn't care where it comes from—all he cares about is to know what he is eating. The man who sells me a food article for that which it is not, is as guilty of obtaining money under false pretenses as the man who sells me a fictitious gold brick or a bogus check, representing it to be genuine. The Chief of the great Department of Agriculture at this exposition put the thing in a nutshell when he said: "If I go to a grocery store and buy axle grease and take it home and spread it on my bread and eat it, it is my privilege to do so, but if I go to a grocery store and ask the grocer for butter and he gives me axle grease, representing it to be butter, there is a compounding of villainy that ought to send somebody to jail. Food products have been put on the market with statements on their labels that owing to their richness in gluten were particularly good for diabetic persons; when the fact was, that these very products contained scarcely any gluten and were the very worst foods that a diabetic person could eat. Blackberry brandy is used a great deal for the sick, and yet not long ago it was found that a product represented to be blackberry brandy was sold all over the State of Pennsylvania that never saw a blackberry.

The extent to which human rapacity will go in the poisoning of humanity has been revealed again and again in the investigation of the milk supply in our different cities. In one of the most complete investigations that was ever made in the milk supply of one of our great cities, it was found that most of the milk fed to the people was a menace to public health, that it was not only adulterated, but polluted—and nearly four hundred outbreaks of epidemic diseases was actually traced to this polluted milk. Milk cans and bottles were found to be reeking in filth. Milk depots unsanitary and unclean.

The common practice in warm weather of freely treating fresh meats of all kinds with certain preserving powders, is preposterous. "Have you thought," asks Col. T. K. Bruner, Secretary of the Board of Agriculture of North Carolina, and Superintendent of Special Exhibits at this exposition, "that the exquisite flavor of the oyster was gone, and that so early in life you were to lose the relish for this gastronomic delight? Visit a fish or oyster packing house on the coast and you will find that the fault is not your own. It comes from the half barrel of preserving powder kept in a corner for dosing 'shucked' oysters and boxes of fish destined for the interior." Then there are the thousands of tons of ice cut from pools which are stagnant and this ice sold to housewives daily.

I understand from the chemists that in a pail of cheap jelly is sufficient acid to eat a hole through your hand if extracted and concentrated and that the same will apply to adulterated vinegar. When we realize how deadly formalin is used to keep milk from turning sour, how deceased horses and mules and donkey meat is sold for beef, how filthy butter is worked over and retailed as new and fresh, how fermented tomatoes are made up into catsup, how jams, jelly and preserves, not even distantly acquainted with the fruit, are made wholly of gelatine, glucose, chemical coloring and flavor, how chemical vinegar, catsup and table sauce are put upon the market containing no vegetable matter whatever, how pickles are made green by a preparation of copper, how wines are sweetened by glucose and beers rank with salicylic acid and so on ad libitum—when we realize these things, is not the suggestion to put upon the label the names of preservatives and coloring matters, used in food products, wise and conservative, and shall not this important work have the absolute, unqualified and enthusiastic support of the American newspaper press?

Abraham Lincoln gives the following recipe for prolonging life: Do not worry; eat three square meals a day; say your prayers; think of your wife; be courteous to your creditors; keep your digestion good; steer clear of the biliousness; exercise; go slow and easy. "Eat three square meals a day and keep your digestion good!" How can we when for a greater part of the time we do not know what we are eating? The meal that we call a square meal may be made up of all sorts of adulterated, deleterious food and drink. Modern culinary art may make it pleasing to the palate and a delight to the eye. We imagine that it is the best that the modern science of cookery and of food making can produce. Probably it is, but the question that concerns the intelligent consumer is, How will it affect the stomach after it has been eaten? Is the aliment nourishing and conducive to health or is it calculated to derange the stomach and impair the digestive functions? Of what benefit to the human family is all our progress in dietetic science if manufacturers and dealers persist in supplying us with materials that are harmful and deleterious? The consumer can not have an expert chemist with him or an expert taster to test the quality of everything that he eats. So insidious is the work of deleterious foods in breaking down the processes of digestion that their baneful effects are not recognized in many cases until the later years of life when the harvest of suffering and distress from the seeds of improper alimentation is large and costly. To ask us to eat three square meals a day and keep our digestion good in these times of widespread food adulteration is a bit of unintentional irony which would be funny if it were not serious.

Contemplate for a moment the folly of a builder who is rearing a temple and who puts into it material of haphazard selection of no adaptability or durability. Some of it spurious, some of it weak, some of it rotten. This is what we are doing with the human structure, supposed to be the temple of an immortal soul. Man differs from the lower animals upon whose careful breeding so much money and care are expended in that his intellect presents almost unmeasured possibilities of achievement, and these possibilities bear a direct relation to bodily nourishment. What we can accomplish in this world depends upon the development of our powers and this development depends upon nutrition. No great achievement can come out of a poorly nourished body. The eating of impure, improper and adulterated food not only induces an impairment of the powers, but a final breaking down of the moral nature. How much crime may be traced to the diseased and weakened mentality that comes from impoverished bodies, is something beyond human calculation.

Sanitary duties and food inspections are included in the rules of health commissioners, and housekeepers count hygienic theories with their privileges. Too often neither these rules nor theories are put into practice. The municipality jeopardizes the good citizenship and life of the community. The housekeeper does not secure for the family the best chances for longevity, comfort and happiness through safe and properly nourishing foods.

In view of the fact that adulterated or vitiating foods deteriorate the individual, and consequently retrograde communities and nations, it would seem that neither protest nor appeal should be necessary to secure the enactment of laws prohibiting the sale of other than absolutely pure foods, a violation of these legislative decrees to be a severely punishable offense. Obviously, such laws, if rigorously carried out, would assure a higher moral, intellectual and physical standard to a people. Nevertheless, a veritable crusade has been necessary to secure what seems adequate legislative restrictions in the sale of fraudulent foods, in several states. The partial fallacy of this achievement is clear in the fact that these restrictions are too often allowed to go slack through local lassitude in enforcing the laws.

As a forerunner of a possible national surveillance of foods placed on sale in markets, it remains to each community to carry all available protective methods into effect, including legal restrictions and whatever means the general citizenship can enact without interfering with personal liberty and legitimate business prerogatives.

*A feasible and rational means of checking the traffic in food frauds is through publicity. Food commissioners who have had the courage to enforce the law against food frauds have been at-*

*tacked by the manufacturers of the spurious brands, and always to the benefit of the public since these brands were then advertised as base impositions through the controversy. Whenever these contaminating foods are publicly talked about, the community gets a providential warning, and refrains from taking chances with things to eat that need defense, and, perhaps, in acrimonious measure.*

The valuable publicity that has been brought to this cause by the able and fearless work of such men as Sherwood, in South Dakota, Ladd, in North Dakota, Scoville, in Kentucky, and many others of the commissioners who have had the courage to enforce the law, cannot be estimated nor can the amount of publicity that has been secured through the splendid work done by the head of our Bureau of Chemistry, Dr. Wiley. Mr. Sherwood's work has attracted attention all over the country because of the fearless and courageous manner in which he enforces the State Pure Food Laws. His administration is characterized by uncommon tact combined with a cautious aggressiveness that is satisfied with no compromise and no half-way enforcement of the laws that are on the statute book. Prof. Ladd of North Dakota has waged an active and effective war against food frauds in his State. Prof. Ladd's ideas of enforcement of law are exemplified in a policy that is without favor or prejudice and which is no respecter of corporations, which has no friends to reward and no enemies to punish. In the administration of his office, it appears that his only concern has been the interests of the consumers of North Dakota which he is appointed to safe-guard under the provisions of the State laws. He has shown himself to be an honest and fearless advocate of pure foods and conscientiously devoted to the interests of the public, and has set an example which may be commended to the Food Commissioners in other States for their study and emulation. It is upon this type of man that the country must depend for honest and adequate legislation against impure and adulterated foods and for the rigid enforcement of laws already on the statute book.

*Surely if you are told that catsup contains coal-tar dye this information is worthless so far as the consumer is concerned, unless the brand of catsup is also given together with the name of the manufacturer. There is no value to the public in an ambiguous warning against foods that are vitiating and poisonous. What is necessary is a definite assertion concerning a definite brand or particular species of food. Moreover, the name of the manufacturer should be given in order that no mistake be made in deteriorating an honest brand, and also to reveal the identity of the person or persons who foists food frauds upon a community. Such information, duly supplied by*

food commissioners who have the nerve to enforce the law, will be a guarantee of protection to the publisher in publishing the names of manufacturers who are putting out fraudulent goods. Better still, would be the establishment by publishers of their own laboratories for the analysis of food products and the employment of chemists whose scientific ability and standing would stand high in any court. Such publicity as this, backed up by scientific testimony that could not be refuted, giving the fraudulent brands of goods with the names of the manufacturers thereof, would of itself stop the sale of these products and drive the manufacturers out of business. The good work already done by the Food Commissions is bearing gratifying fruit in the plans of many manufacturers who are getting ready to put out products that will conform absolutely to the State Food Laws. After a long and bitter fight they have wisely concluded that the best thing for them to do is to rigidly conform to the requirements of the law. It is not unreasonable to assume that one of the impelling causes in this direction has been the publicity already given to products that have not conformed to the law, reducing their sales and injuring their business.

To get at some idea of the difficulties of the State Food Commissioners in enforcing the law, I have corresponded with several commissioners and chemists and I want to thank them all for the prompt manner in which they responded. I am especially grateful to Mr. Dingman of the Food Commission of Minnesota and Mr. Sherwood, Food Commissioner of South Dakota, for the very complete information they sent me relative to this matter. The information I have received will probably be of interest. The letter I received from Mr. Dingman, Assistant Commissioner at St. Paul, Minn., reflects the feelings—and the difficulties—of all commissioners, as expressed in their communications. In accord with these views, the labor and judgment required in enforcing the provisions of pure food laws, by the commissioner, is much greater than the general public comprehends. The correction of the many evils that individual greed and commercial dishonesty foist on the public, through the adulteration, substitution and misbranding of foods and other fraudulent practices, must come after the deceit is discovered beyond a doubt and this in itself is a continuous and active anxiety for the commissioner.

The skill of the chemist and compounder is constantly used to improve or cheapen food preparations. Often purity and healthfulness are sacrificed that the gain in selling the product may be greater to the manufacturer, at the expense of the consumer. Many manufacturers argue that a food is in no way injured in its purity when mixed with another food of equal purity in itself, but of lesser value—and that the compound

should be allowed a place on the market without being labeled to disclose its true composition. To prevent this kind of fraud requires keen discrimination and moral stamina, and the courage to act. Many states have made it imperative to label all similar products to disclose their true character. But the manufacturer endeavors to avoid this legal condition by cunningly confusing the chemist—and so making the work of the commissioner as difficult as possible. The manufacturer also appeals to the jobber and retailer by offering them larger profits on the sale of his fraudulent product, and frequently enlists their support in disposing of the goods and cheating the consumer—so, adding to the commissioners perplexity and labor.

The prime object of dairy and food laws is to protect the consumer—hence, the commissioner must sometimes prosecute an offending merchant. The merchant usually claims immunity on the plea that he was ignorant of the composition of the fraudulent product, and not being a chemist cannot be morally or legally held as a violator. Keen discrimination is necessary when the merchant makes statements, and finely-drawn judgment is requisite in the execution of the law to drive the illegal product from the market. No commissioner wants to punish an innocent merchant because he is ignorant and deceived, if the object of the law can be reached in any other way, but the *law must be enforced*. If a violator of the law is arrested, duly tried and convicted and fined that fine should not be remitted. The law must be enforced. If it is a bad law public sentiment will repeal it.

Manufacturers often resort to trickery to throw suspicion on chemists' findings. Instances have been found where the same brand of goods turned out both legal and illegal. This is done to discredit the work of the commissioner, for if a food is found pure in one retail store, and in the next is discovered mixed with a cheaper food, both of the same brand and purchased of the same manufacturer, and at the same time, naturally, suspicion falls on the commissioner who prosecutes the one merchant and clears the other. This condition makes the commissioner very cautious before resorting to prosecution.

Again, the manufacturer will have all the goods with one jobber strictly legal, while the same brand of goods in the hands of another jobber is adulterated. Here special care must be used to convince the unfortunate jobber that his goods are not being discriminated against, to the advantage of the other jobber, who it may be claimed is "solid" with the commissioner.

Perhaps the most serious obstacle which the commissioner has to combat is the "political pull" violation. Many an offender high in "party" relationships attempts to use the advantage he may

have through the shield of political influence to give his wares a good certificate when known to be illegal. Right here, I am glad to say, I have noticed that in the State of Minnesota the commissioner can be proud of the fact that the chief executive has always insisted on a strict enforcement of law, and the violator never has sufficient "political pull" to change or hinder the strict enforcement of all laws.

The press of this country has accomplished inestimable benefit for the entire citizenship in publishing the controversies between food commissioners and the manufacturers of fraudulent foods and as "live news." The press can accomplish still larger benefits in stinging editorials concerning the broadcast disastrous consequences of selling adulterated foods and with specifications as to brands and names of manufacturers. Publishers need have no misgivings regarding litigation in consequence of a righteous effort to protect the community against the crime of placing fraudulent foods on sale since the foods themselves furnish criminating evidence in accord with analysis by State chemists and done in State laboratories. In any prosecutions against manufacturers by the food commissions or in any cases where the food commissioners give the names of fraudulent food manufacturers in their bulletins or reports, the evidence that the information is based upon should be carefully preserved and furnished to the press as a protection to the press if the press decided to give the matter publicity. There can be no question that the most effective plan for checking the sale of impure and adulterated foods will be found in this wide and fearless publicity of the press and the State Food Commission ought to offer the press every necessary protection. Those who are deriving a profit from the poison of the human family fear the spot light of publicity more than anything else. What the newspaper press has done for mankind in the betterment of governmental and social conditions, is beyond all human conception. What could this mighty force accomplish in the interest of the race if it should throw aside all mercenary interests of commercial consideration and turn its editorial batteries upon the food frauds that are sold in this country, and should make a loud earnest and unified appeal for the honest labeling of food products? The people would not buy food products that had been condemned by the public press as unfit to eat. The American newspaper press is with the cause of pure food. There is no question about that. A systematic campaign of exposure of food frauds by the American press would be worth more to the cause of pure food than all the laws that could be passed. But if we had the law and the press both on the side of pure food, it would present a combination that would ultimately drive all fraudulent food manu-

facturers out of business. Not long ago the Pennsylvania Food Commissioners went into session and made a determined effort to call a halt on deceiving the community with adulterated foods. They took up the fight in a wholesale way, and as far as they have gone in the aggression there's a pretty good promise that they will succeed in holding the dealer responsible along with the manufacturer for defrauding citizens through taking their money for foods that are not what they are represented to be, added to the violation of law in selling adulterated things to eat. The publication of the proceedings of these food commissioners in local newspapers was reproduced in public prints all over the United States. So, the benefit was far-reaching, and a splendid example was given for other food commissioners to follow.

There should be a certain discrimination in the treatment of adulterated foods, in print, and by the community, since it does not follow that all mixed foods and complex drinks are dangerous in their consequences when served with bills-of-fare. The results of conglomerate food, as a diet, depends upon the nature of whatever is used to more or less make any product not "the real thing." Frequently, what is known as the adulterating element, is nutritious in itself, and is often used in its own right and title as a desirable part of the menu. Therefore, the signification of protective food laws does not include restriction of liberty in the manufacture of mixed foods for market purposes—provided, no component part of such prepared food be dangerous when taken into the stomach, and if allowed by law. But the sale of such products should be honest, and so fixed by law. No crime is committed when the miller mixes wheat flour and cornmeal. But the line must be sharply drawn on the sale of this mixture as "pure wheat flour, made of the best hard winter wheat." The special aim of the pure food crusade is the adoption and enforcement of national and State laws that shall assure perfect honesty in the sale of all foods.

The enforcement of pure food laws would be a laudable expense to the national and state governments, and the lessening in number of crimes assured by prohibiting the sale of adulterated and unwholesome foods would greatly diminish the cost of legal processes and penalties.

The needful poor will always be with the people, since misfortune, calamity and a degree of evil must be in the finite order of things, but if vitiating foods which engender indolence, intemperance and vice were prohibited, pauperism would be less prevalent. A lessening would follow of demands upon public and private funds for the cure and alleviation of suffering and penury.

Any man or woman may clearly understand that food is qualifying as applied to morals and force of character, through a study of his or her

emotions, desires and intentions, all being associated with food and cooking.

Almost everybody can recall indefinite yearnings for revenge after an unsatisfactory meal, and a consuming desire to kick the waiter who served "spoiled dishes" at a restaurant. Memory harbors a distinct yet objectless grief at the dessert of an indifferently supplied and prepared dinner. Recollection has not let go a certain knock-out blow upon courage to face difficulties, done by "nothing fit to eat." Imagination need not figure in the example of a husband's "vile temper" as the sauce for tough steak, sour bread and "just turned" canned peas. Nor is fiction necessary in mentioning the wife's indefinable, all pervading sense of misery after having launched on a catch-as-may bite because she was too much hurried to eat properly, or because the other members of the family were "out." The mother does not need any hints in comprehending that time and again children are ill because they "have eaten something that doesn't agree with them" or are fretful and nervous because they lack proper nourishment.

Did you ever hear a college president or a high school principal telling the young men and women in his farewell address what to eat and how to preserve their bodies? Imagine such practical advice coming from the lips of a college president, and yet food is the fuel of life, a man's attainment, physical and mental is dependent upon the manner in which he sustains through a rational diet the powers that have been given him.

CHAIRMAN JONES: I want to congratulate you and Mr. Pierce for the able address he has read. We have another discussion under this head by Mr. A. T. Holmes, editor of the *Inland Grocer*, of Cleveland, Ohio, and we will now hear from him.

ADDRESS BY MR. A. T. HOLMES, EDITOR THE INLAND GROCER, CLEVELAND.

MR. HOLMES: Mr. Chairman and Gentlemen:

Let me hope that I am not straying too far from the best thought of this convention when I suggest that the pure food movement involves a question, not so much of public health as of industry. Explaining this I may say that the people are well served—how well, only a minority know—by legislative, judicial and administrative officers, who, we may concede, view this subject with an eye single to securing purity and healthfulness in the food supply of the country. I have sometimes ventured the opinion that the populace as a mass in this regard is better served than it deserves, since with many, perhaps with a majority of food buyers, quality is less a consideration than price.

Ethically the pure food proposition seems to me to mean that all commercial articles designed for human food should be, if not chemically pure, at

least free from added injurious elements and within the natural definition of the name given it.

Practically, the public cares not a particle for this. Food buyers will buy what suits their taste and purse and they will abuse the officer who interferes with either.

Following this line of thought I conceive that the industrial aspect of the proposition may properly become paramount. Doubtless it has been suggested at every annual gathering of the National Association of State Dairy and Food Departments that the honest dealer is entitled to protection against the producer of fraudulent goods. If the honest manufacturer is protected, the public is necessarily safeguarded. The consuming public, gentlemen, will consume anything so long as it is within its reach. When you have educated the consumer up to the point of demanding a certificate of purity for all he (or rather she) consumes, you will have attained the highest standard of protection for the honest producer. If you protect and encourage him, you will have accomplished all for which you are laboring.

Doubtless these observations are trite to men of long experience with the intricate problems of food administration. I am well aware, too, of the difficulties which unqualified acceptance of this proposal involves.

It may seem that he who proceeds upon my theory will find himself in the minority, opposed by many producers and by a majority of consumers besides, but I never knew of a food commissioner yet who was asked to pledge himself, before election, to do anything. I have heard of many who were asked to pledge themselves *not* to do many things. The people who are served are silent if not indifferent. The interests affected by food laws are alert and clamorous.

My point, which I am rather slow in coming at, is that the question of price of food is sure to be or to become a leading point in food administration. It is a fact which I do not think has been controverted that pure food is more costly than impure. The incentive to adulteration is the desire of consumers to purchase foods at the lowest possible price. It has been claimed by one of the most active and effective of state food officials that the purification of food has been obtained in his State without any increase in the price of goods. I have not at hand statistics to support this statement, although my experience leads me to think that there has been no notable increase in the cost of strictly pure articles of any food line in the State to which I refer. There has, however, been a decided increase in the average cost of foods required by each family. This may very probably be due to the fact that impure food cannot be safely sold in that State and the consumer is compelled to buy a better class of goods at a higher price.

If I am right in this, and I do not think that my statement will be controverted, then the question of pure food becomes one more of industry than one of public health.

If there be a demand for an adulterated article, or for a cheap article, it can only be produced through adulteration, and if the government forbids the satisfaction of that demand, doesn't the government thereby destroy an industry which has a reasonable excuse for existence?

I believe that the best interests of the grocery trade would be served by legislation and administration which would force the use by the people of only the very best articles of food. I believe also that the best interests of the consuming public would be so served. At this moment, however, when statistics on the cost of living are attracting the attention of every thinking man, can a proposition under which the people may be deprived of the privilege of buying cheap, and even poisonous substances, if they so desire, be properly advanced?

I offer this suggestion to invite your criticism, thinking that from your experience I may be able to obtain a better answer to the question which I have raised than I have given myself.

A. T. HOLMES.

CHAIRMAN JONES: We have also with us one who has had considerable experience in the line of food work and who will now address us upon the subject of "The Constitutionality of Food Control Laws," Mr. Scott Bonham of Cincinnati, Ohio.

MR. BONHAM: I know, ladies and gentlemen, that the subject of the constitutionality of pure food laws is one that is as interesting as any of Rudyard Kipling stories on a hot afternoon like this, when there are so many matters of entertainment surrounding and therefore I shall not be surprised if my paper does not prove exceedingly interesting. However it is one of the practical phases of pure food legislation, and about every law that is enacted has to finally go up against the courts in some form or other, and those of us who are enforcing pure food laws are usually opposed by great interests which are contending with every technicality that the most skillful and learned members of the legal profession can discover, and who put obstacles in the way of quick and expeditious enforcement of pure food laws. Of course, the postponement of the day of judgment is always of advantage to the criminal, even though he may be guilty of nothing more or less than a small misdemeanor. Now those of us who are on the other side of the proposition, sometimes we are on one side and sometimes on the other; to-day we may be enforcing a law and to-morrow we may be defending, and when we get on the other side we are trying to

show to the court how impartially the law is being enforced or the impartial interpretation that the pure food commissioner is endeavoring to put on a law which we are all ready to admit must be a good law, but that the commissioner has gone wrong in his method of enforcement. Now I have got my paper written and I am going to read it to you as rapidly as possible.

#### "CONSTITUTIONALITY OF FOOD CONTROL LAWS."

This subject very naturally suggests to you, as it did to me the inquiry as to what view point we are to take from which we are to determine the constitutionality of these so-called Food Control Laws. It certainly means that I shall devote my attention in the few minutes assigned to my paper not to questions arising in the enforcement of British, German or French Pure Food Laws, but entirely to legislation in the United States either by the Congress of the United States or by the Legislatures of the several states, for as Judge Cooley observes, "In American constitutional law, there is a division of the powers of sovereignty between the national and state governments by subjects, and uncontrollable power over certain subjects throughout all the States and Territories, while the States have the like complete power within their respective territorial limits, over other subjects. In regard to certain other subjects, the States possess powers of regulation which are not sovereign powers, inasmuch as they are liable to be controlled, or for the time being to become altogether dormant, by the exercise of a superior power vested in the general government in respect to the same subjects."

Judge Cooley has again very clearly set out the way to determine the constitutionality or unconstitutionality of a given law, depending upon whether it is an act of federal or state legislation, in the following language:

"The Government of the United States is one of enumerated powers; the governments of the States are possessed of all the general powers of legislation. When a law of Congress is assailed as void, we look in the national constitution to see if the grant of specified powers is broad enough to embrace it; but when a State law is attacked on the same ground, it is presumably valid in any case, and this presumption is a conclusive one, unless in the Constitution of the United States or of the State we are able to discover that it is prohibited. We look into the Constitution of the United States for grants of legislative power, but in the Constitution of the State to ascertain if any limitations have been imposed upon the complete power with which the legislative department of the State was vested in its creation. Congress can pass no laws but such as the Constitution authorizes either expressly or by clear implication;

while the State Legislature has jurisdiction of all subjects on which its legislation is not prohibited."

The constitution of one of the States might prohibit the enactment of certain kinds of laws, while the constitution of any other State might be silent as to such laws and contain no restrictions upon enactments upon its legislative branch, so that a law enacted in the former state would be unconstitutional for it, while a similar law passed by the Legislature of the latter State would be constitutional for the latter; and still this enactment of the legislature of this latter State, though constitutional, gauged by this State's constitution might be unconstitutional as a violation of some provision of the federal constitution, prohibiting the enactment of such laws by a State.

The parts of the federal constitution most frequently quoted and referred to in determining the constitutionality of laws enacted by the legislatures of states to regulate or prohibit the manufacture and sale of foods, drugs or drinks adulterated so as to become inimical to health or to promote fraud are the following:

From Section 8, of Article I, enumerating the powers of Congress, paragraphs 1, 3 and 18, namely:

"The Congress shall have power—

To lay and collect taxes, duties, imposts, and excises, to pay the debts and provide for the common defence and general welfare of the United States; but all duties, imposts, and excises shall be uniform throughout the United States:

To regulate commerce with foreign nations, and among the several States, and with the Indian tribes:

To make all laws which shall be necessary and proper for carrying into execution the foregoing powers, and all other powers vested by this Constitution in the government of the United States, or any department or officer thereof.

Also from paragraph 2, of Section 10, of Article I:

No State shall, without the consent of the Congress, lay any imposts or duties on imports or exports except what may be absolutely necessary for executing its inspection laws.

The tenth amendment:

The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the states respectively or to the people.

The Fourteenth amendment:

"No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law."

Under that broad and comprehensive term, the Police Power, reserved to the State by the provisions of the 10th amendment and for the most

part only limited by the provisions of the 1st amendment prohibiting the establishment of religion or abridging the freedom of speech or the press, etc., the provisions quoted above and that against the impairment of contracts, are enacted the various laws prohibiting food, drink and drug adulterations. This power has been left with the individual States. It cannot be taken from them by any legislation of Congress, nor can it be bargained away by the State; and it is as one learned judge has remarked, that power of the State by which "persons and property are subjected to all kinds of restraints and burdens, in order to secure the general comfort, health and prosperity of the State; of the perfect right in the legislature to do which, no question ever was, or upon acknowledged general principles, ever can be made, so far as natural persons are concerned."

Notwithstanding this evidently clearly defined power reserved in the State, not granted to the Federal Government, still it is along these lines of authority and powers residing in the State to legislate, that there arise numerous conflicts between the State and the Federal authorities.

None more frequently than that which occurs in the passage of laws which seem to interfere with the commerce between the States, the regulation of which is granted solely and entirely to the Federal government. The place at which the line should be drawn, it is frequently difficult to determine. Judge Cooley very learnedly states it in this language:

"The line of distinction between that which constitutes an interference with commerce, and that which is a mere police regulation, is sometimes exceedingly dim and shadowy, and it is not to be wondered at that learned jurists differ when endeavoring to classify the cases which arise. It is not doubted that Congress has the power to go beyond the general regulations of commerce which is accustomed to establish, and to descend to the most minute directions, if it shall be deemed advisable; and to whatever extent ground shall be covered by those directions, the exercise of State power is excluded. Congress may establish police regulations, as well as the States; confining their operations to the subject over which it is given control by the Constitution. But as the general police power can better be exercised under the supervision of the local authority, and mischiefs are not likely to spring therefrom so long as the power to arrest collision resides in the national courts, the regulations which are made by Congress do not often exclude the establishment of others by State covering very many particulars. Moreover, the regulations of commerce are usually, and in some cases must be, general and uniform for the whole country; while in some localities, State and local policy will demand peculiar regulations with reference to special and peculiar circumstances."

And Professor Freund, of the University of Chicago, in his recently published work on "The Police Power" in a summary of principles has thus stated it:

"The State may enact measures for the protection of safety, order and morals, though affecting foreign and interstate commerce, subject to the following principles:

1. Every measure of State legislation, however legitimate in itself, yields to positive regulation of interstate or foreign commerce by Act of Congress, inconsistent with such measure or intended fully to cover the same matter."

And in connection therewith, he cites the Act of Congress of May 9, 1902, in which the United States now yields to the States the control over imported oleomargarine.

2. Every State measure is void which in any way discriminates against interstate or foreign commerce, or against the products of other States or countries by reason of their foreign origin, unless the local conditions of the place of origin involve a peculiar danger of disease or other harm.

3. It is within the province of federal jurisdiction to determine whether some article is a lawful article of commerce or not; a determination by the State is not conclusive. A State may not prohibit or restrain the importation of lawful articles of commerce, nor their sale, as long as they retain the character of imports.

In this connection he very naturally calls your attention to the decision in *Leisy vs. Hardin*, in 135 U. S. 100 and the Wilson Law nullifying the decision, and to the necessary effect of a demand for Federal legislation where the State police power has been tampered with to an undue extent and to the more efficient method in federal administration and the advantages of federal legislation because of its uniform operation throughout the country.

This is particularly true of legislation with reference to food control or adulterations, for notwithstanding the fact that in all the States with possibly one or two exceptions, there has been more or less legislation regulating and prohibiting food, drink and drug adulterations, yet in the enforcement of these laws, officers have found them inefficient and though they have resulted in widespread benefit, yet there is a general demand for national legislation.

Let us give our attention to some of the decisions of the courts upon laws enacted by States which may be entitled "Food Control Laws."

#### STANDARDS MAY BE FIXED.

The Statutes of Massachusetts fixed the standard of milk that it should not contain any water or any foreign substance, and the Supreme Court has held in 146 and 153 Massachusetts that the State has a right to fix such standard and that

the sale of milk containing water or any other foreign substance whether deleterious to health or not is validly prohibited. New York has not gone so far and in the case of *People vs. Biesecker*, 169 N. Y. 53, held that the absolute prohibition of the use of any other preservative in butter or other dairy products except salt, etc., was unconstitutional, the court in the syllabus to the decision laying down the following proposition as to legislation relating to articles of food:

(1) That the Legislature cannot forbid or wholly prevent the sale of a wholesome article of food.

(2) That legislation intended and reasonably adapted to prevent an article being manufactured in imitation or semblance of a well-known article in common use and thus imposing upon consumers or purchasers is valid.

(3) That, in the interests, of public health, the Legislature may declare articles of food not complying with a specified standard unwholesome and forbid their sale.

The court in concluding its decision, observed:

"Ingredients and processes may be prohibited as unwholesome or causing deception, but not solely because they preserve."

The Supreme Court of Missouri has held in case of *State vs. Layton*, 160 Mo. 474, that the act making it unlawful for any person, etc., doing business in Missouri to manufacture any article, etc., for the purpose of being used \* \* \* in the preparation of food in which article there is any alum is not unconstitutional, although the evident design of such act was to suppress a baking powder admitted to be in general use, but whose unwholesomeness and unhealthfulness, notwithstanding its general use, is in sharp and forceful dispute.

In making this decision the court laid down as a test of the constitutionality of an act of the legislature involving the production of an article for sale for food and drink, the following proposition to-wit:

"If it be an article so universally conceded to be wholesome and innocuous that the court may take judicial notice of that fact, the Legislature, under the Constitution, has no right to prohibit it; but if there is dispute as to the fact of its wholesomeness for food or drink, then the legislature can either regulate or prohibit it.

In the case of *Weller vs. State*, 53 O. S., where in the manufacture of vinegar, low wine, formed from fermented grain and passed through roasted malt, not for the purpose of adding any substantial ingredient to the vinegar, but for the purpose of giving it color and aroma and flavor, and without this treatment it would be colorless, the court held that the vinegar so produced contained artificial matter and was in contravention to the statute against the adulteration of vinegar and that such law does not exceed the police power of the State.

#### INSPECTION LAWS.

The constitutions of some of the States prohibit the enactment of inspection laws. In a State where such enactments are not prohibited by the State constitution, inspection laws might be enacted not repugnant to the Federal Constitution providing for the inspection of foods, manufactured in the State for the purpose of being exported, but an inspection law providing for the inspection of goods coming into the State from another State would be unconstitutional under the decision of *Turner vs. Maryland*, 107 U. S. 38, though in 171 U. S. 345, the principle is recognized that a State may inspect for prevention of fraud goods coming into this State, in that case the act under consideration providing for the inspection of fertilizers imported from other states and fertilizers manufactured within the state.

#### OLEOMARGARINE LEGISLATION AND DECISIONS.

The manufacture and sale of oleomargarine has been prolific of regulative and prohibitory legislation, at some stages justified by or accredited to sanitary reasons and later to means to prevent deception and fraud. The manufacture and sale of oleomargarine was absolutely prohibited by an act of the Pennsylvania Legislature and in 114 Pa. St. 265, the act was sustained as a proper exercise of the police power, which decision of the Supreme Court of Pennsylvania was afterward affirmed by the Supreme Court of the United States, 127 U. S. 678, the court holding that the 14th amendment of the constitution was not designed to interfere with the exercise of the police power by the State for the protection of health, the prevention of fraud, and the preservation of the public morals.

The statute of Pennsylvania was passed in 1885 and the decision of the Supreme Court was in 1888. A similar statute passed in New York in 1884, was by the Court of Appeals in New York in 1885 held to be unconstitutional, the court in the case of *New York vs. Marx*, 99 N. Y. 377, holding that the right to liberty secured to the citizens by constitutional prohibition includes not only right of the freedom of the person from restraint, but also the right to adopt and follow such lawful industrial pursuits not injurious to the community, as he may see fit, and that a legislative enactment, therefore, which absolutely prohibits an important branch of industry, not injurious to the community and not fraudulently conducted solely for the reason that it competes with another and may reduce the price of an article of food, is unconstitutional.

The court was evidently of the opinion that the legislation was not designed to protect health or to prevent fraud, but that it was designed to strike at an industry that was competing with the milk and butter industry, and that it was, therefore,

unreasonable legislation and not legitimately within the police power of the state. In Minnesota and Maryland the courts have taken the same position as the Pennsylvania courts, sustaining the prohibition of the manufacture and sale of oleomargarine.

However, the Supreme Court of the United States in the case of *Schollenberger vs. Pennsylvania* decided in 1897, 171 U. S. page 1, that oleomargarine being recognized in Europe and the United States as an article of food and commerce and made a lawful article of commerce by an Act of Congress, it cannot be wholly excluded from importation into a state from another state where it was manufactured, although the state into which it was imported may so regulate the introduction as to insure purity, without having the power to totally exclude it.

And the court further held this act of the legislature of Pennsylvania invalid to the extent that it prohibited the introduction of oleomargarine from another state, and its sale in the original package, the court distinguishing this from the *Powell* case on the ground that in the *Powell* case the oleomargarine had been manufactured and sold within the state. And the court also distinguishes it from *Plumley vs. Massachusetts*, 155 U. S. 462, holding that the court held that a conviction under the Massachusetts law for having sold an article known as oleomargarine not produced from unadulterated milk or cream, but manufactured in imitation of yellow butter produced from unadulterated milk or cream was valid, and that the court held that under the statute that the party was only forbidden to practice in such matters a fraud upon the general public; that the statute seeks to suppress false pretenses and to promote fair dealing in the sale of an article of food, and that it compels the sale of oleomargarine for what it really is by preventing its sale for what it is not; that the term "commerce among the states" did not mean a recognition of a right to practice a fraud upon the public in the sale of an article even if it has become the subject of trade in the different parts of the country. It was said that the constitution of the United States did not take from the State the power of preventing deception and fraud in the sale within their respective limits of articles, in whatever State manufactured, and that the instrument did not secure to any one the privilege of committing a wrong against society.

The recent legislation in the act of May 9, 1902, providing that oleomargarine, etc., transported into any state, etc., for use, consumption, sale, etc., shall upon arrival within the limits of such state, be subject to the operation and effect of the laws of such state, etc., and providing for the taxing for colored oleomargarine was held on May 21, 1904, by the Supreme Court to be constitutional.

But this latter law and decision is to be discussed by the paper of another.

While it is impossible in a paper of the brevity of this one to discuss with anything like thoroughness all the phases of the constitutional questions involved in this so-called Pure Food Legislation, I wish this paper to be considered simply as a few excerpts from decisions and incidental hints that may be food for some discussion.

I cannot close this paper with a better general summary of the principles governing regulation and prohibition than in the language of Professor Ernst Freund, to whose excellent work on police power I have already made reference. He summarizes them as follows:

1. Provisions requiring labelling and marking are valid, provided their primary purpose be not to make a useful article odious.
2. The legislature may fix the standard of an article of commerce known by a certain name, and forbid the selling of an inferior article by that name.
3. The legislature may forbid imitations, subject probably to this modification, that where imitation products have come to be recognized as legitimate substitutes, the power of prohibition should not be exercised to the destruction of valuable industries.
4. The legislature should not, and probably may not, prohibit the use of harmless ingredients which increase the intrinsic value and usefulness of the article, especially of antiseptics and preservatives.
5. The legislature should not, and probably may not, prohibit harmless and useful substitutes and compounds.

CHAIRMAN JONES: The program as you will notice is somewhat lengthy for to-day and it is now getting late, but still I know you will listen with patience to the address of another who is an eminent authority in his line, and who attended the last meeting of our association, representing one of the largest manufacturers and jobbers of food products in the United States, if not in the world, and one who has been the greatest friend of the food commissioners in his way. I take pleasure in introducing to you Mr. J. D. Miller, attorney for Sprague Warner & Co., of Chicago.

ADDRESS BY JAY D. MILLER.

#### POWERS AND DUTIES OF THE STATE AND FEDERAL GOVERNMENTS IN RELATION TO FOOD LAWS.

I take my text from Section 10, Article 7, of the Constitution of the United States, which reads as follows: "The powers not delegated to the United States by the Constitution, nor prohibited by it to the states, are reserved to the states respectively, or to the people."

The states did not, in adopting the Constitu-

tion, surrender the police power to the national government, and they have not been prohibited by the federal constitution from exercising such power. Therefore, the states have retained the police power, and have complete and absolute authority over matters of this nature, and it is questionable whether congress has power to enact any of the food measures now pending.

The danger of such legislation being unconstitutional was fully recognized by congress in enacting a law to control the sale and transportation of butterine, which, to prevent its being unconstitutional, was prepared and adopted, not as a police measure, but as a revenue law. And the same course was pursued in framing the law governing the sale and transportation of mixed flour.

There is, however, no doubt that complete power rests in the several states to enact and enforce all desired legislation upon this subject. The courts of last resort in nearly all states where food laws have been enacted have held them to be constitutional, and I am aware of no act of this nature which has been pronounced unconstitutional by the supreme court of any state.

The supreme courts of Michigan and Pennsylvania have held that all persons who sell adulterated foods do so at their peril, and the penalty will be enforced even though the seller had no knowledge of the adulteration. The supreme court of Minnesota has held that no person has the constitutional right to keep secret the composition of a substance which he sells to the public for food. On the question of adulteration, the supreme court of Massachusetts has held that the addition of harmless foreign matter, even though it be pure water, is, under the statute of that state, unlawful.

To show the complete power of the states over the sale of food products, it is only necessary to refer to the recent decision of the supreme court of the state of Missouri, Vol. 160, page 474, in which a statute absolutely prohibiting the sale of baking powder containing alum was upheld and enforced.

In order to prevent the sale of deleterious foods, and also to prevent commercial fraud, it is only necessary for the several states to pass adequate laws and enforce them.

Food laws, however, should be enforced impartially, not only as to persons and places, but also as to articles of food. When I refer to the impartial enforcement of the law as to all food products, I mean just what I say. For example, I would not exclude or overlook butter and cheese, as is now universally the case. If I were a food commissioner, I would endeavor absolutely to prohibit the sale of all food products containing coal tar colors. I believe the use of coal tar colors,

commonly known as aniline colors, in food products to be harmful.

#### CATS AND GUINEA PIGS KILLED BY BUTTER COLOR.

About fifteen months ago I had a conference with the food commissioner for one of the states concerning butter color. (Nearly all the butter on the market is colored, and analysis shows that all the leading brands of butter color are made from coal tar, although I find many persons innocently suppose them to contain vegetable colors.) This food commissioner advised me he had been experimenting with butter color and had taken a teaspoonful of one of the well-known brands of butter color and administered it in milk to a kitten, which resulted in the death of the kitten. He then obtained a strong, healthy tom cat, weighing about thirteen pounds, and a little larger dose resulted in its death. Subsequently he obtained a number of Guinea pigs, which he caused to be killed with butter color.

In the month of March of the present year I had a conference with the commissioner of agriculture for another state at his office, in the presence of Mr. John C. Puetz, of Hinsdale, Ill., at which time the commissioner stated that his chemist, who was somewhat skeptical on this subject, experimented upon himself by taking a teaspoonful of butter color and as a result became dangerously ill, and it required the services of two physicians for about four hours to revive him.

#### BUTTER COLOR MAKES CHILD SICK.

Mr. Charles Fargo, a farmer living near Geneva, Illinois, obtained from a local grocer in the month of May of this year some color intended to color butter or butterine. His daughter, aged four years, unfortunately swallowed a quantity of this color intended to color one pound and immediately thereafter became ill, Dr. R. G. Scott of Geneva, Illinois, who was called to attend her, subsequently advising me that as a result of swallowing this color the child was sick about one week.

Dr. Scott further advised me that after having had this experience with Mr. Fargo's little daughter he procured one of the leading brands of butter color on the market and by administering small doses of this preparation succeeded in killing three cats.

I hold in my hand an official document issued by the state board of health of the state of Iowa, a few days ago, it being Official Bulletin No. 3, Volume 18, for the month of September, 1904. By referring to page 38 you will find an account of the death of the two-year-old son of Mr. Frank Krob, living near Iowa City, Iowa, as a result of drinking a quantity of butter color which had been left within his reach.

It appears to me that these cases would indicate to you, gentlemen, who are food commissioners representing the several states, and have

charge of the gastronomic destiny of the American people, the importance of seeking to prevent the use of coal tar color in all articles of food. You enthusiastically and properly denounce its use in Maraschino cherries, yet you never eat more than one of these cherries at a sitting, and only then in your cocktails, which I assume you rarely take. The masses, however, use butter in large quantities three times per day and cheese is an article of universal consumption. These are things upon which the people rely for food. Why do you seek to prohibit the use of color in Maraschino cherries, which are so rarely used, and never seek to prevent its appearance in such articles of universal consumption as butter and cheese? Has any dairy and food commissioner ever arrested or otherwise proceeded against any man for selling butter and cheese colored with coal tar? Certainly not. Will any commissioner allow the use of any other product colored with coal tar? Certainly not. Why this discrimination as to articles? What we most need is uniformity in legislation in the several states, and the impartial enforcement of existing laws rather than more laws.

In conclusion, I suggest that I can conceive of no case of adulteration or commercial fraud which cannot effectively be reached by state legislation. If, however, it shall appear that there are cases which cannot be so reached, then it will become the duty of the national government, in so far as it may have the power to make provision therefor, and I believe the manufacturers and dealers in food products will welcome such legislation.

Wednesday, September 28th.

Congress met pursuant to adjournment at 9:30 o'clock a. m.

CHAIRMAN BAILEY: The hour has arrived for opening the session and we must get to work promptly. I believe the secretary has a communication to read.

SECRETARY ALLEN: I have a communication from the National Bee Keeper's Association and a resolution in which they want concurrence by this association, as follows:

"RESOLVED, That the National Bee Keepers' Association in Congress assembled, send their congratulations to the National Pure Food Congress for their labors in behalf of pure food, and hope they may be successful in securing national pure food legislation."

I will say that the bee keepers are heartily in sympathy with us and we with them. The matter of adulteration of honey is something that is largely practiced all over the United States, and they are earnestly seeking for a law that will protect them so that their industry and product shall be protected.

The resolution was referred to the committee on resolutions.

CHAIRMAN BAILEY: We are now to hear an address by one whom I know we will all take great pleasure in listening to, and those that are not here are going to miss a rare treat. Professor Shepard of South Dakota is going to give us his paper and I now have the pleasure of introducing him to you.

PROFESSOR SHEPARD: Mr. Chairman, ladies and gentlemen: The topic assigned to me to-day is one that is assigned to me every year, that of the use of coloring matter and preservatives in food. I will say that I did not attempt, in the preparation of this paper, to discuss this matter in its international bearings. I saw by the program that others were here, and able speakers, who would be able to cover this matter, and therefore I have confined it to our own national issues. I had another reason for doing this, and that is, that what is true of our own nation must be true of others, and I hope the time may come when we can not only secure national legislation along these lines, but that we can secure international legislation, so that we can have uniform laws covering all of these matters which we are to discuss to-day.

ADDRESS BY PROF. JAS. H. SHEPARD.

#### THE USE OF COLORING MATTER AND PRESERVATIVES IN FOODS.

JAS. H. SHEPARD, PROF. CHEMISTRY, SO. DAK. AG. COLL.

Mr. President, Ladies and Gentlemen:

It is the purpose of this paper to pave the way for the general discussion which is to follow on the use of colors and antiseptics in foods. The question for discussion is by no means a simple one. Considered from an ethical standpoint there is but one side to the controversy. But when we enter the realm of practice and review the usages and customs now prevailing, some of which are now sanctioned by law, the question becomes exceedingly complex. In short here is a case where the camel has not only succeeded in introducing his nose into the tent, but he has also followed with a major portion of his body.

When we come to the consideration of the use of coloring matter in prepared food products we find the opposing interests to be, on one side, the manufacturer, and on the other the intelligent consumer as represented by officers whose duties are to administer our pure food laws. The arguments advanced by the different interests are substantially as follows:

1. The manufacturer claims that by the use of coloring matter he is enabled to put out a grade of goods of uniform appearance.
2. The manufacturer claims that the colored goods are more pleasing to the eye; that is, they appeal to the aesthetic sense of the consumer.

3. He claims that the demands of his trade call for goods artificially colored, or, in other words, that the consumer prefers the brightly colored goods.

4. The manufacturer also argues, and with a good show of reason, too, that if coloring matter is allowed by law in one class of goods like butter, any law that prevents him from employing coloring matter in another class of food products, such, for example, as fruit products, is unjust and is also rank class legislation.

5. The honest manufacturer also claims that he does not use coloring matter for the purpose of concealing inferiority. I say, honest manufacturer, since the dishonest one is a criminal and without standing in this court of discussion.

6. He also claims that no harm can come from the use of artificial colors on account of the infinitesimal quantities employed.

As opposed to these contentions of the manufacturer, the intelligent consumer sets up his opposing claims substantially as follows:

1. He objects to the very uniformity sought by the manufacturer. He claims that Nature has given natural food products distinguishing colors by means of which he is enabled to select such foods as appeal to him as wholesome and palatable and pleasing. He claims that the use of coloring matter prevents him from such selection and therefore leaves him in doubt as to the grade of goods he is buying. He is unwilling to trust this matter to the *ipse dixit* of the manufacturer, much preferring to be allowed to use his own judgment in the matter.

2. On the manufacturer's second contention, the intelligent consumer takes an opposite stand. The consumer claims that the artificial colors are at best a makeshift. He claims that they are not identical with natural colors in depth, shade or toning. Moreover they arouse in him a suspicion that something harmful may be lurking in these bright artificial colors, consequently they do not appeal to his aesthetic sense, but on the contrary arouse a deep aversion.

3. The intelligent consumer replies to the third argument of the manufacturer by saying that only so long as a man is ignorant of the fact that goods are artificially colored will he prefer them. Even in the minds of the most benighted there is implanted a deep distrust of any sophistication as applied to articles of daily diet. The consumer also adjudges the manufacturer guilty of deception in causing the unsophisticated and unwary citizen to believe it possible that any system of manufacture can from diverse stocks of raw material, prepare absolutely uniform goods of equal or higher color when compared to the raw material itself. The intelligent consumer knows that all brightly colored fruits, for example, suffer a diminution of color when subjected to the processes of manufacture.

4. To the manufacturer's fourth contention, the consumer answers that because the law has gone wrong on one article of diet, that is no reason why it should go further. Two negatives sometimes make an affirmative, but two wrongs never make a right. He is also living in hope that an enlightened people shall arise some day and demand the banishment of all artificial coloring matter wheresoever or whatsoever.

5. The courteous and intelligent consumer allows the honest manufacturer due credit for his integrity and the honesty of his purpose as stated in the manufacturer's fifth contention. But the consumer still objects to the principle involved. He realizes from bitter experience that all manufacturers are not honest. He knows that such do not hesitate to use coloring matter to cover up the inferiority of their goods. He also realizes that the dishonest manufacturer even resorts to substitution and fraud for monetary gains. He also realizes that were all coloring matter absolutely prohibited these frauds and substitutions would be impossible. Hence he appeals to the honest manufacturer to abstain from the use of artificial colors in his high grade products and I am glad to add that the appeal has not been in vain. Moreover the intelligent consumer has responded to the manufacturer's attitude and has expressed his appreciation by buying liberally of the uncolored goods. He has even hinted to the manufacturer that he is willing to pay a slight premium for naturally colored products.

6. In regard to the sixth contention of the manufacturer, the consumer is still unconvinced. He contends that from the very nature of the case he is in no position to reach a definite conclusion one way or the other. He also contends that the manufacturer is similarly circumstanced and wants the whole question passed upon by experts in both the chemistry and the pathology of the subject. The consumer alleges that the manufacturer is responsible for the introduction of unknown and untried ingredients into his dietary; and his impulse is to reject these small amounts of coloring matter on general principles, putting the *onus probandi* entirely upon the manufacturer, where it rightly belongs. Moreover, the consumer views with alarm the long array of colored food products found upon the retailer's shelves and reasons correctly that grave danger lies in the constant consumption of coloring matter and preservatives in his daily menu. The writer has shown that it is possible for the average consumer thus to take in his daily menu forty doses of coloring matter and preservatives in a single day. The consumer is not easily convinced that even though one small dose might bring no harmful result, that the same is true when the dose is multiplied by forty. And especially is this true if the consumer is expected to repeat this experiment every day in the year. He naturally

and conscientiously objects and with a good show of reason.

The attitude of the manufacturer upon this point is somewhat different. He is thinking only of his one particular line. He uses it himself and perhaps uses it in his own family. He even goes so far sometimes as to publish pictures after the manner of baby food advertisers. But this convinces the consumer not at all. He has in mind a host of different products and all artificially colored. His great desire is to find foods without coloring, and he sees no reason why he should make exceptions in favor of anybody.

Again the manufacturer demands, ignoring the contention of the consumer that the burden of proof rests upon the manufacturer himself, that some one shall show conclusively that coloring matter and preservatives are actually harmful when taken in small doses. Thus it appears that both parties to this contention are anxious to have further light, and such being the case it seems that now is an auspicious time for experts to investigate the subject thoroughly. Unfortunately nearly the whole field needs to be covered.

We are all familiar with Dr. Wiley's work with borax and salicylic acid. Chlopin has made an elaborate study of the effects of coal tar dyes upon animal life and has found many of them harmful, especially those belonging to the nitro, azo and triphenyl groups. He maintains that all anilin dyes are more or less harmful to the animal organism and that their use in food stuffs should be prohibited by law.

See Sta. Record, Vol. XV., p. 1,100; also p. 494. Chlopin also tested the effect upon the skin of various coal tar colors. Of the fifty dyes investigated he found forty to be harmful. He concludes that no relation exists between the chemical classification of the dyes and their physiological and toxilogical properties. He did not find the red dyes poisonous.

It is not the purpose of this paper to cite all the experiments made, therefore suffice it to say that the investigations already conducted have not been sufficiently authoritative to command the confidence of the world. Even in the case of coal tar colors which have been pronounced harmless by isolated investigators, the verdict is not fully accepted.

It seems that a coloring matter should be studied in two different and distinct relations. First, its effect upon digestion and the digestive enzymes should be investigated, and second, its physiological effect upon the different organs of the system should be determined. And not until it can be shown to be harmless in both respects should it be taken for granted that it may be consumed with impunity. We are at the wrong end of the discussion in our practice. Coloring matters in foods are now an actual fact regard-

less of the fact of their being harmless or otherwise. The logical procedure would have been to have determined first whether any color is injurious. Had this been done many colors now used would never have been used at all.

During the past year, the writer and his assistants, Messrs. Norton and Hepner, have made a number of determinations bearing upon the effect of coloring matters on peptic digestion. These experiments were made in tubes using hard boiled whites of eggs as a source of albumen and Merck's pepsin was employed as the digestive agent. The ratio between the albumen and pepsin was so regulated that the digestions would be completed in about three hours. To this end 2.5 grams of coagulated egg albumen that had been passed through a sixty-mesh sieve were used to three milligrams of Merck's pepsin. The albumen was weighed into tubes and then sufficient coloring matter was added to dye the albumen some standard shade such as strawberry red or orange, according to the dye used. The amount of coloring matter employed was therefore exceedingly minute varying from 1 to 2 milligrams. Next 25 cc. of a 2 per cent solution of hydrochloric acid carrying exactly 2 milligrams of pepsin was added. Of course blank tubes containing only albumen and pepsin were prepared and then the whole series was placed in a specially prepared water bath and the temperature was maintained at from thirty-eight to forty degrees Centigrade until the digestions were completed. The tubes were carefully watched and the contents were thoroughly agitated in rotation at short intervals of from three to five minutes.

The first series of colors experimented upon was the high grade Kohnstamm colors which have been physiologically tested and prepared especially for use in coloring food products. The results recorded below are not the results of a single determination, but the experiments were repeated until we were satisfied that working with the chemicals we used and by the methods employed that the results were uniform and reliable. The results with the Kohnstamm dyes are as follows:

| Dye Added.            | Time of Digestion. | Percent Retardation. |
|-----------------------|--------------------|----------------------|
| Blank .....           | 2 hrs. 40 min.     | ..                   |
| Marsilene orange .... | 2 hrs. 50 min.     | 6                    |
| Carminoline .....     | 3 hrs. 5 min.      | 16                   |
| Amaranth red .....    | 3 hrs.             | 13                   |
| Orolene yellow .....  | 3 hrs.             | 13                   |
| Amberine .....        | 2 hrs. 40 min.     | ..                   |
| Turmerine .....       | 3 hrs.             | 13                   |
| Myrtiline green ..... | 3 hrs. 5 min.      | 16                   |
| Saffoline red .....   | 2 hrs. 40 min.     | ..                   |

It thus appears that these carefully prepared coal tar colors excepting amberine and saffoline red exert a slight antiseptic influence on pepsin and peptic digestion. I am well aware that it is

the custom of some to decry artificial digestion experiments making the broad general claim that the conditions are not the same as in the system. Notwithstanding all this, I maintain that under the limitations used and for the sole purpose of determining the effect of various reagents upon the digestive enzymes themselves no better method can be employed and no more trustworthy results can be obtained.

It might be well to add that in these experiments the dyes stained the albumen and only passed into solution after the albumen was digested. Attention should also be called to the fact that only sufficient dye was used to stain the solid egg albumen and not the whole contents of the tube.

The next series of experiments concerned some commercial coal tar colors that had been collected from various sources. The results follow:

| Dye Added.            | Time of Digestion. | Percent Retardation. |
|-----------------------|--------------------|----------------------|
| Blank .....           | 2 hrs. 40 min.     | ..                   |
| Alizarine .....       | 2 hrs. 40 min.     | ..                   |
| Carmine No. 40.....   | 2 hrs. 40 min.     | ..                   |
| Magenta .....         | 2 hrs. 50 min.     | 6                    |
| Acid magenta .....    | 3 hrs.             | 13                   |
| Methyl green .....    | 2 hrs. 50 min.     | 6                    |
| Eosine .....          | 2 hrs. 55 min.     | 9                    |
| Aurine .....          | 3 hrs.             | 13                   |
| Tropaeolin 000 No. 2. | 3 hrs. 5 min.      | 16                   |
| Tropaeolin 000 No. 1. | 2 hrs. 40 min.     | ..                   |
| Tropaeolin 00 .....   | 2 hrs. 50 min.     | 6                    |
| Bismarck brown ....   | 2 hrs. 40 min.     | ..                   |
| Fuchsine .....        | 2 hrs. 50 min.     | 6                    |
| Vinegar brown .....   | 2 hrs. 50 min.     | 6                    |
| Benzopurpurin .....   | 3 hrs. 20 min.     | 20                   |

This table speaks for itself. As a rule coal tar colors delay digestion and thus tend towards inducing indigestion and dyspepsia. And another fact should be brought out here, and that is, we found that by increasing the amount of dye used the time of retardation was proportionally increased. In formal terms, then, the time of retardation is directly proportional to the amount of dye employed. It is needless for me to enlarge upon the bearing which this fact has upon the manufacturer's sixth contention.

We have also made an attempt to give a graphical representation bearing upon this sixth contention for the harmlessness of minute quantities of coloring matter. The thought occurred to me that the proper way to estimate the potency of a dye was not by its weight but by its tinctorial power. This can readily be made visible to the eye; and comparative results may be reached by working with measured quantities of white woolen cloth and exact volumes of the liquid containing coloring matter.

We have selected some of the artificial preparations used in preparing summer drinks for this

exhibit. The particular preparations selected are Thompson's Perfected Beverage Preparations, which are wholly artificial and made to represent preparations from cherries, strawberries and oranges. In each case two ounces of the preparation was used and the extracted dyes were deposited upon two square yards of white woolen cloth. An inspection of these samples of cloth will tell the rest of the story. But in order to convey a sharper impression we have transferred the amount of dye which the consumer would take in a single drink to the small squares of cloth containing one-fourth square yard each which I now invite you to inspect. Now, honestly, do you believe that anyone can say truthfully that the consumer only takes an infinitesimal quantity of dye at one time? If this is an infinitesimal quantity I must return to the undergraduate classes of our college and learn my mathematics all over again.

Our country is flooded to-day with such vicious food preparations as these. I might have exploited any one of the countless brands to be found upon the market. The results would have been the same. And now, in view of the fact that many of these dyes are harmful, impeding digestion and ruining the digestive organs, what is the plain duty of our lawmakers and pure food officials? In South Dakota the question has been answered by making the use of these dyes illegal. And moreover since these dyes are now extensively used for fraudulent purposes, it seems time to call a halt and pass stringent national laws so that the health of this great people may be conserved. Our best manufacturers are in hearty accord with this sentiment. They realize that just in proportion to the curtailment of the sale of fraudulent and unsanitary foods, in just that same proportion will the demand for honest and healthful goods increase.

This is what coloring matter is bringing us to. You see these materials are put up in nice, tasty cartons like that (exhibiting it to the audience); they are put up in bottles, labeled like that. This is sufficient to make three gallons. One of these is the orange preparation and the other the cherry preparation, and here is the strawberry, and I want to say this, that we have been plagued to death with these things. We find one brand and drive it out of the market and another one comes up. It is a case of eternal vigilance. We can't always watch them. You can no more suppress them than you can keep people from stealing, not a bit, and wherever we find them we just simply throw them out. These two yards of cloth which I now show you are from the cherry preparation, and you see the amount of dye that has been used. It gives you something of an idea of what it is. I have had several ladies beg me to give them some of these woollens for making shirt-

waists and so on. That is a good use to put coal tar dyes to, but not the dyeing of foods.

CHAIRMAN BAILEY: I will ask the professor if that dye is fast?

MR. SHEPARD: That dye is fast. An intimation was made here on the floor that these colors are from the natural fruits and I am sorry anyone would do such a thing as that; no reputable chemist has ever dyed a piece of cloth and put it on exhibition as a coal-tar dye unless he was sure of his evidence. Do you think I would have dared to do that? The statement was made that it was really made by vegetable colors. Don't you think I analyzed those and found they were coal tar dyes first? I certainly did. I know what I am talking about, and what is more than that, I will call on Mr. Sherwood to confirm me, that when we told the manufacturers they were coal tar dyes they sent and took them out of the state. That is all there was to it. They didn't question it, and I don't see what is the use of a man coming up here and making such a statement as was made on this floor yesterday.

Now we thought perhaps you might be interested in something else. This also will give you a graphic representation. (Exhibiting colored cloth.) We figured out carefully how much of this dye would be added in a single glass of this prepared summer drink, and we transferred that amount of dye to this cloth, and that is what you would take in a single glass of that cherry preparation.

MR. NOBLE: One single glass?

PROF. SHEPARD: One single glass.

MR. PATTERSON: What was the size of the glass?

MR. SHEPARD: About half a pint. This one that I now show you is from the strawberry preparation. This is a beautiful shade of color—coal tar. It did not dye evenly, I found, where I introduced it first into the concentrated dye. You see it could have been made a little darker. This spotting is caused by the dye itself; and I found another thing, that this dyed fractionally. It is evidently a mixture of two dyes, and one of them bit into the woolen better than the other, but this is worse than the other, as you can readily see.

MR. MCPHERSON: That is the color you ought to wear, professor; you look well in it.

PROF. SHEPARD: I would be willing enough to wear it, if necessary, but I don't want to drink it. Now I will tell you another thing; I haven't mentioned it in my paper, but as a matter of fact when we were staining these cloths of course we were obliged to handle them with our fingers, and my assistant and myself had our finger nails dyed these brilliant colors and it was impossible for us to remove them. They stayed a long time; and we touched the inside of the mouth with the dye also and we found it would make a

spot, and I believe the presumption is it would dye the surface of the mucous membrane of the alimentary canal. I don't think there would be very much doubt about it.

The sample of orange I have here. That is made to represent oranges. Now oranges are a good thing, but look at the amount of dye extracted from two ounces of material. That makes quite a pretty contrast, don't you think so? We might adopt those for our national colors.

Now a statement has been here bearing on the infinitesimal quantities; that only very small quantities are used. I have here a piece of cloth which was dyed by using 60 minims of a dye that Mr. Sherwood found in Sioux Falls, employed by a firm there in making their pop beer. We took about 60 drops of the dye and we simply transferred that dye to these two yards of cloth. Now don't you see, when you come to examine these things as to their tinctorial power, it gives you a different idea about it? This sample is one I gathered from the open markets of the state.

CHAIRMAN BAILEY: Have you made it clear that the dye you used is the same that is used in the fruit products?

PROF. SHEPARD: Yes; each of these dyes is used by the manufacturer in making a certain class.

MR. PATTERSON: And you can get that same color out of the fruit products?

PROF. SHEPARD: Yes, if they are colored artificially you can extract it.

MR. PATTERSON: If they are colored with that color?

PROF. SHEPARD: Yes, if they are colored with that color, but this one was used in making orange drinks, and I should not be surprised if you could go right out here on the World's Fair grounds, right here in the center of civilization in the twentieth century and you can buy this same stuff in liquid form and find it in actual practice. I do not know that that is true, but I say I should not be surprised if it was.

When one comes to realize to what an enormous extent coloring matter and food antiseptics are used, he may well pause and ask how all this came about.

It may be possible years hence when the American people have passed away and its great monolith shall be erected in some great museum of our successors, the curious may read a chronicle running somewhat like this: "In those days (our grandmother's days) she prepared the food for her family with her own hands. In her preserves she used no salicylic acid nor did she dye them with auro-purpurin. Her catsup knew no azo red, nor did it contain benzoic acid. Her corn was guiltless of sodium sulphite and saccharin, nor was her cider acquainted with salicylic acid. For her pickles she employed no copper sulphate and she made her root beer from the

bark of prickly ash and sassafras and sundry roots unstained by naphthol yellow nor tinged by fushsine red.

And she raised up Jonas and Obadiah, who were mighty men of brawn. Their sturdy arms hewed down the primeval forest and made the wilderness a paradise. And Jonas begat Augustus Clare, who wore tooth pick shoes which begat him corns and adorned his neck with a choker collar, and these forbade sufficient bodily exercise. And Obadiah begat Vernon d'Harcourt, who wore checkered pants and a shirtwaist and parted his hair in the middle. And these sons despised their grandmother and hearkened not to the teachings of their fathers.

And Augustus Clare married an ænemic girl from the Misses Smithers' fashionable finishing school and she knew no Domestic Economy. And Vernon d'Harcourt married a milliner's clerk, who bleached her hair and wore a picture hat and a pensive smile. And she felt herself above kitchen drudgery.

And they all lived upon prepared health foods and drank coffee substitutes and took dyspepsia tablets for dessert. And it came to pass that the sons of Jonas and Obadiah began to long for their grandmother's pantry, but she had passed away. And they hungered for their mother's cooking and their father's advice. But these also had joined the silent majority. So of necessity they turned again to the grocer who had sold them breakfast foods and wheat-bran coffee and asked for the things which had been so good in their boyhood days.

And he gave them Mrs. Jones' catsup, which was made of grated turnips and filled with starch and dyed with azo red and Bismarck brown and preserved with benzoic acid. And he gave them Mrs. Williams' jells and jams which were made from apple pulp and dyed with benzo-pupurin and flavored with methyl valerianate. And he gave them fruits embalmed in glucose and salicylic acid. And he gave them meats which were mummified in creosote and boracic acid. And he gave them root beer to drink that was dyed in red and purple shades, and alum bread and coppered corn and peas. And they did eat; and so they died.

#### THIS MONUMENT IS ERECTED TO THEIR STUPIDITY."

But we must pass on to a consideration of the use of antiseptics in foods. At the same time we were noting the effect of coal tar colors upon peptic digestion we also carried on a series of experiments with the common antiseptics. The proportions in which these antiseptics were added to the albumen correspond to that generally employed by manufacturers. We used the following proportions: Salicylic acid, 1 to 1,000; boric acid, 1 to 1,000; borax, 1 to 600; sodium sulphite, 1 to

800; benzoic acid, 1 to 1,000; formaldehyde, 1 to 10,000; sodium fluoride, 1 to 25,000; beta naphthol, 1 to 4,000; saccharine, 1 to 500. In these experiments also the antiseptic was added to the albumen and then the pepsine solution was added. The details were carried out as before. Note the fact that the added preservative was not proportioned to the weight of the whole contents of the tubes, simply to the albumen employed, which was 2.5 grams as before. The results follow:

| Antiseptic Added.    | Time of Digestion.                                              | Percent Retardation. |
|----------------------|-----------------------------------------------------------------|----------------------|
| Blank .....          | 2 hrs. 40 min.                                                  | ..                   |
| Sodium fluoride..... | 2 hrs. 50 min.                                                  | 6                    |
| Borax .....          | 2 hrs. 50 min.                                                  | 6                    |
| Boric acid .....     | 2 hrs. 50 min.                                                  | 6                    |
| Formaldehyde.....    | Practically inhibits digestion. Not complete after eight hours. |                      |
| Sodium sulphite .... | 2 hrs. 40 min.                                                  | ..                   |
| Beta naphthol .....  | 2 hrs.                                                          | 13                   |
| Salicylic acid ..... | 2 hrs. 30 min.                                                  | 6                    |
| Saccharine .....     | 3 hrs.                                                          | 13                   |
| Benzoic acid .....   | 3 hrs.                                                          | 13                   |

Here is another case where very minute amounts of a substance produces marked interference with the digestive enzyme of the stomach. As in the case of the coal tar colors an increase in the antiseptic produces a corresponding increase in the per cent of retardation. It is very probable that the continued use of any of the antiseptics enumerated will cause a serious impairment of the health.

In the case of borax and boracic acid, Dr. Wiley has shown that they are not desirable constituents of our daily food. In the case of salicylic acid, as I understand, the same thing is true. I believe it is now quite generally conceded that salicylic acid breaks up under the action of the digestive enzymes producing phenol or carbolic acid as a by-product.

Carbolic acid is one of the active poisons and it may be due to this fact that salicylic acid produces its evil effects upon the system.

Sodium fluoride is not largely used nor should it be used at all. Note the amount employed in the preceding experiment, only one part in 25,000. Compare this with common salt or sodium chloride which may be safely used in the proportion of one part to 50. This proportion indicates that sodium fluoride is 500 times more active than common salt in the estimation of those employing preservatives. As a matter of comparison we made a few determinations with the so-called natural preservatives which have been used from time immemorial. We added to tubes these substances in the following proportions: Common salt, 1 to 50; sugar, 1 to 1; vinegar, 1 to 10. When used in these proportions we found the retardation to be for salt, 22 per cent; sugar, 13 per cent; vinegar,

13 per cent. These experiments would make sodium fluoride only about 125 times more powerful than common salt.

By comparing saccharine with sugar it appears that the saccharine is about 500 times more powerful than sugar. Saccharine is not freely used in food products nor should it be used at all.

Formaldehyde is evidently unfit for use in food products, and most states forbid its use by law.

In the case of sodium sulphite it is probable that some secondary reaction occurred between the salt and the hydrochloric acid whereby sodium chloride and sulphur dioxide were formed, the latter escaping as a gas. Consequently the fact that the digestion was completed with the blank is without significance. No argument for its employment is therefore deducible.

I believe that beta naphthol is not used in this country. The fact that it is a coal tar derivative argues nothing in its favor. Benzoic acid is also a coal tar derivative.

I wish to call attention to one other point before closing this paper. By a wrong course of reasoning some might say: Since these colors and antiseptics do not retard peptic digestion any more than salt, sugar or vinegar, therefore they are equally harmless. This does not follow. Sugar is a food and is promptly removed from the stomach allowing digestion to proceed. Salt is not taken into the stomach in the proportion of 1 to 50. In diluted solutions its office is beneficial to the fluids of the body. In strong doses it is simply cathartic. Vinegar is also taken in more dilute form. When indulged in too freely it is decidedly injurious, as everybody knows.

Moreover, the natural preservatives are sufficient. Anything in excess of a sufficiency is objectionable and its use is to be condemned. The natural preservatives possess taste and flavor whereby the consumer becomes aware of their use. The system rebels at an excess, their use thus being naturally limited. In the case of the high power of artificial antiseptics, it is different. They do not reveal their presence by either taste or smell and the system would readily receive even a fatal dose and be none the wiser.

The multiplication of antiseptics or preservatives is decidedly objectionable for another reason. With them as with forces in the realms of physics, where we know that when several forces act on a body, each force produces its own effect regardless of all the other forces, so in the realms of dietetics, each antiseptic produces its own effect regardless of the action of any other that may be present, provided the antiseptics do not react upon one another. This fact is brought out very clearly by one tube that we prepared by the addition of borax, common salt, sugar and vinegar in the proportions enumerated, and copper sulphate in the proportion of 1 to 2,000. From the

figures already given it appears that the sum of the per cents of retardation for the salt, borax, sugar and vinegar is 54 per cent. But in the experiment the retardation was 87 per cent. This leaves a margin of 33 per cent to be accounted for. It may be that this 33 per cent is due entirely to the presence of the copper sulphate in the same proportions that it is used in greening pickles. Or it may be that the poor enzymes were tired out with so much odds against them. I should not be surprised at all if they really did have a clear case of "that tired feeling." And still a person might take just such a dose as this in one single article of prepared food—sweet pickles.

Others may reach different conclusions, but I find it impossible for me to advocate the use either of coloring matter or antiseptics in foods.

CHAIRMAN BAILEY: I told you there would be something doing when Professor Shepard got on to his favorite subject, and it is now open for discussion. Mr. Smithers, representing the Association of Manufacturers and Distributors of Food Products of the United States, is here, and I will call upon him.

#### DISCUSSION BY MR. J. D. SMITHERS.

MR. SMITHERS: Mr. President and Gentlemen: It is much to be regretted that Mr. Frailey, the president of the association, whom I have the honor to represent, has found it impossible to attend this distinguished gathering. In his stead I can only indicate in a brief way the points which may be said to embrace the cardinal principles of our association, concerning the questions of coloring matter and preservatives in fruit and vegetable food stuffs, upon which Mr. Frailey would have addressed you in his usual energetic and pleasing manner and would likewise have given this learned assembly the impressions drawn from an earnest, honest and deep study of the subjects.

The well-known thirty-odd manufacturing establishments composing our association are in hearty sympathy with all rational food laws, and consistently practice their declaration that they believe in truthful labels and wholesome ingredients. As to coloring matter, they are ready to obey the signal of the consumer. As colors add cost to the product they would be glad to see a market not demanding them. So long, however, as the customer has not been educated to dispense with the coloring, so long will the manufacturer be required to follow—always, however, by using non-injurious substances, and further, always having his goods truthfully labeled.

As to preservatives, our association believes certain goods require them, and until advanced scientific experiments have demonstrated their uselessness they will be used, but not such as are injurious. As manufacturers, our members rely upon the honest and able chemists of this coun-

try and elsewhere to demonstrate the chemical needs and properties of food preservatives, and as those learned men advance so will the manufacturers follow.

In conclusion, let me ask that this congress recognize the progressive science of alimentary chemistry, and urge the enactment of laws broad enough to meet the spreading light from year to year, and especially to emphasize the necessity of a federal food law in the interest of uniformity, thus promoting honest products and sound trade.

CHAIRMAN BAILEY: The next discussion of this subject will be by Professor E. F. Ladd, of North Dakota.

#### DISCUSSION BY PROF. E. F. LADD.

PROF. LADD: Mr. Chairman and Gentlemen: I am only going to take a few moments' time, because Professor Shepard has covered this subject very thoroughly; he has covered it much better than I could have done, and in conducting experiments he has gone much farther than anything I have carried out.

But I can confirm, so far as my own work goes, the statements that are made by Professor Shepard, that there are fruit products on the market containing the amount of these coal tar dyes indicated in the samples he has shown here. I have taken from one of the highest priced cans of strawberries on the market in North Dakota, from a pint can, enough coal tar dye to color a piece of flannel two yards square fully as deep a red as shown in these samples. I have taken from artificially colored cherry and pear and orange products that are made right here in St. Louis and shipped to North Dakota, enough from one pint bottle of those to dye a piece of flannel cloth of the same size, two yards square. Now it is not confined to any one particular line of goods. There is hardly a product on the market but what contains in some of the brands, either chemical preservatives or coal tar dyes, and in some instances several of these. I have products in my laboratory at the present time that contain, not one chemical preservative, but at least four chemical preservatives, each in small quantities, put there presumably by the manufacturer to cover up the presence of the preservatives by using several of them in such small quantities that we could not detect any of them. I cannot account for it in any other way. Now the amount of these chemicals used is all out of proportion, in many instances, to the amount that is necessary to be used to preserve the food products. During the past few weeks we have been working on meats and we found in a pound of hamburger steak over forty grains of boracic acid. We have found over twenty grains of sulphites in a single pound of hamburger steak. Sometimes there would be boracic acid, sometimes sulphites. Sometimes they would be in the sausages and sometimes in the canned

meats. These are not the only preservatives that are used in the meats preserved. And so I say that even though they were to be used, there is no necessity for using them in such proportions as we find them in the market. I am opposed to the use of these preservatives in any food product. We have ruled against them in North Dakota, and do not permit the sale of food products in the state that contain any one of these preservatives, or that contain saccharin or coal tar dyes. I admit what Professor Shepard says, that some of the coal tar dyes may be harmless, but in 80 per cent of the cases I have examined the dye is used to cover up some inferiority. I have a sample of currant jelly in my laboratory at the present time that probably never saw a currant plant, and yet it is colored with coal tar dye. It contains a large amount of a poor grade of glucose with a great deal of sulphites; it has as chemical flavors, ethereal salts. It is largely starch paste, with 63 per cent of glucose. And yet that class of products are constantly coming into the state, and in spite of the food law they are shipped in around the borders of the state and sent out as far as possible, but there have not been so many of these products shipped into the state since a year ago last July, when the law went into effect. I believe we are on the right track when we prohibit the use of all preservatives in food products, and when we prohibit the use of the coal tar dyes and I think we could go farther and prohibit all the vegetable dyes. I see no necessity for the use of them. They are used in the majority of cases as a means of covering up fraud and for purposes of deception. We have to permit vegetable dyes under the law in North Dakota, unless they are used for direct deception. We say, for instance, that coal tar dyes must be left out of butters, as coal tar dyes are not permitted to be used in the state, and they are pretty well driven out at the present time.

I will not take more of your time. I am glad Professor Shepard has made such a thorough discussion of this subject and has presented such valuable data, which will serve as a basis for future work.

CHAIRMAN BAILEY: We have here a paper sent by the firm of Acker, Merrall & Condit Co.; the secretary will please read the paper.

ADDRESS BY ACKER, MERRALL & CONDIT CO.

New York, September 24, 1904.

International Pure Food Congress at the Louisiana Purchase Exposition:

The mere mention of "legislation in reference to food products" is creating much consternation among manufacturers.

The duties of the various boards of health in our large cities, during the past decade, have been largely increased.

They have been looking for "microbes" and they

have found them, they seem in fact to have found microbes for every ill and ailment.

There is, however, still one important microbe which, whenever discovered should be promptly annihilated.

The coffees of Arabia and the Dutch Java Islands are called upon to bear many burdens of misinterpretation as to quantity of production.

It would require nearly the whole area of the United States of America to furnish all the so-called Java and Mocha coffees that are offered for sale. One notices many signs in grocery stores such as:

Genuine Java and Mocha, 15 cents per pound.

Genuine Java and Mocha, 18 cents per pound.

Genuine Java & Mocha, 20 cents per pound.

These are prices at which it is impossible to furnish the article represented.

How often one meets with signs:

"New Columbia River Salmon," 1 pound cans, 10 cents per can; in all probability these are only what is known in the trade as "do-overs" or some cheap grade of Alaska fish.

You can read in the papers every day offerings of the "finest quality California fruits" at a price that would justify nothing more than so-called "pie fruit."

Then again, if you follow the advertisements, you can buy the "Finest home-made preserves and jams," strictly pure—or like "mother used to make them," at 10 or 12 cents for 1 pound jars.

There is one very important personage in the canned goods business who is seldom mentioned—one who has more to do with the ill health of the poorer classes than anyone else, and whose traffic should be looked after and stamped out entirely by the passage of the "pure food law."

We refer to the "swell" man, whose stock in trade consists of a horse and wagon, a charcoal stove, a puncher, a soldering iron and a bar of lead.

He is the fellow that goes around and buys all the "swell" tomatoes and "swell" fruits and with his paraphernalia he plugs the cans, re-solders them and sells them to the dealers who cater to the poorer classes.

He is accountable for more sickness and more ptomaine poisoning than any one else. He is the man that needs attention. He is one of those who make it dangerous for reputable manufacturers and distributors.

We will not take up your valuable time by mentioning hundreds of other instances.

The average housewife depends largely upon her maid or her grocer or butler for her knowledge of food products. There is no article that enters the household of greater importance than food, and yet, it is food that is the least understood.

The average housewife is well versed in "dry goods" or "house furnishings" and also as to their value, but when it comes to the every day neces-

sities of life, very few realize the importance of a knowledge of food products and to what extent they enter into the "health question" of the family.

The press has done much in past years upon "educational lines," but there is a great deal yet to be done before the housekeeper thoroughly understands the importance of a knowledge in regard to pure food products.

We are heartily in favor of every honest effort that is being made for the passage of a law regulating the manufacturer as well as the distributor of food products, and we would heartily endorse any enactment that will compel food products to bear true labels stating the ingredients contained in the goods offered for sale.

The various states that have passed pure food laws have done much to improve the very serious condition of affairs, but a "National Pure Food Law," as all reputable manufacturers and dealers know, would simplify matters much and would be a great protection to the public.

Another very dangerous custom in the "canned goods" business that should be regulated is the selling of labels by concerns going out of business for the use of other packers. This is a dangerous traffic and is unfair to reputable firms who do not stoop to using the names of others.

We would like to see embodied in a pure food law a clause calling for the name of the packer on all labels, or "packed expressly for ——" and here to be inserted the name of the concern for whom the goods have been packed.

The guarantee the consumer really requires is the name of the firm from whom the goods are purchased.

To make ourselves clear, we believe it would be a hardship to embody in any pure food law absolute restriction of the label to bear in every instance the name of the packer.

There are several concerns in the United States, reputable people whose name is a guarantee for quality, who pack largely the goods they offer for sale, and yet they could not possibly pack every variety themselves. In these instances it is necessary that they buy or procure from other reputable packers such goods as they cannot produce in their own canneries.

Where the label shows that they have been packed for such firms the guarantee to the consumer is strong enough and such firms ought not to be compelled to state to the world from whom they have purchased the goods, they were unable to pack themselves, as such are business secrets which need not be divulged.

We can name many instances where the guarantee of the distributor would carry more weight than the name of the packer, whose name is not so well known as the firm of the distributor, who has supplied the customer for many years and in whom the purchaser has every confidence.

No pure food law should be enacted that does

not contain a strong clause prohibiting any misstatement as to the quality of the goods. For instance, we read on a label: "Absolutely the finest produced." Now it should be a misdemeanor if such clause appears on the label and the goods so-called are not of a quality warranting such a statement.

There should be a standard of quality the same as there are standards of sugar and of coffee.

If you speak of No. 7 Rio every man in the trade knows what you are talking about, but in canned goods we talk of "extra standards" and "double extra" and "fancy standards," in fact they are called almost anything that the packer pleases to call them and it is well known that many a time such appellations on the label are not warranted by the quality in the can.

Take the item of "pure jelly." "Pure currant jelly" means pure currant juice and sugar. It does not mean currant juice mixed with apple juice and sugar and manufacturers or distributors should be compelled to state this clearly on the label.

We urge the passage of a pure food law that would elevate the standard of food products.

We will exert every effort on our part and use our influence to the utmost to secure the passage of such a law—a law that will enable reputable firms to offer to the public the highest standard of pure food products.

In short, we want a law that will control the manufacturer as well as the distributor and a law that requires true and honest labels so that we can call "a spade a spade."

CHAIRMAN BAILEY: The subject will next be discussed by Dr. Julius Hortvet, State Chemist of Minnesota.

#### DISCUSSION BY MR. JULIUS HORTVET.

There have been times when to speak of food adulteration has conveyed chiefly the idea of admixture with harmful ingredients. While that view of the matter has not yet entirely passed out of mind, it is to-day quite generally understood that the great mass of food adulterations are harmless so far as the public health alone is concerned. Throughout all discussions of these questions it is not necessarily suggestive of biased opinion if it is often repeated that to-day, as in times past, men adulterate foods simply to make money. That is a safe proposition on which all can take a common stand, and with this in mind it is no surprise to learn that human greed has often been so strong that men have not hesitated to use substances far more harmful than powdered sand, or ground nut shells, or chicory, in the adulteration of foods. It is only necessary to refer to the history of food adulteration in Europe or in America in order to show that the manufacturers of adulterated foods have shut their eyes to the effects of adulterants on the human system,

and have had their eyes open solely to the question of profits. Is a given substance a successful substitute or makeshift, is this or that compound an effective food preservative, and does a certain coloring matter produce the desired effect? These are the questions which have chiefly been considered, hence we are not surprised at the use of chrome yellow and vermilion for coloring candy, picric acid for coloring liquors, and wood alcohol in the manufacture of flavoring extracts. But these are only a very few of the many illustrations which could be given, yet they indicate that as an historical fact these manufacturers have not been noted for a disposition to stop first to investigate a compound before admitting it as an ingredient in foods. The adulterator has ever been concerned first with his profits; if he has modified the quality of his products, whether for better or worse, it has been done in order to increase his sales; and whenever he has added, whether knowingly or not, certain harmful substances, he has done it simply for money. So it has been down to recent times in the case of these chemical preservatives and coloring compounds; they were first accepted and became popular on account of the increased profits attending their use. A quick, short-cut process of preparing and preserving foods has appealed to the money-maker as much to be preferred to the slower though more natural and time-honored methods with which we are all acquainted. Then also have been considered the vast possibilities for coining money which underlie these processes of deception, for there is no denying the fact that materials have been known to enter into the composition of foods when such materials were in a state of semi-putrefaction, and that these antiseptics and coloring matters have served here an excellent purpose from the view-point of the adulterator. These are facts which have been so often repeated as to be commonplace; they scarcely need mentioning, and they have been given only for the purpose of directing attention to what seems to be the chief question involved in these discussions regarding antiseptics and coloring matters in foods. The use of harmful substances has been checked from time to time as a result of complaints from the consumers, pure food laws have been enacted, punishments and penalties have been inflicted, but each time that the evil has been destroyed in one place or in one form it has reappeared in some other place in another form. Conditions have, however, improved; the steps have been, as a rule, from the use of the more harmful substances to those of a less harmful nature, and the public has been by degrees freed from the danger of consuming poisons. The more toxic antiseptics have to a great extent given way to those which are less open to objection, and in place of the poisonous metallic coloring compounds and the coal-tar dyes,

we seem to be coming to a more prevalent use of a limited class of supposedly harmless vegetable colors. But with these apparent improvements, is the real evil disappearing? I am strongly of a conviction which compels me to say *no*. We are not yet far removed from the first and chief question as to why these substances are used, hence we are still confronted with the dangers which beset the people of several generations past. The answers to these questions are the same to-day as they were ten or twenty years ago, and it is scarcely necessary to repeat arguments for and against the use of chemical preservatives and artificial coloring compounds in foods. These arguments have been so fully and so frequently threshed over that they should be well understood by all intelligent persons. When all arguments are sifted and balanced, there remain certain dominant facts which experience teaches us we cannot overlook—facts that we now fully realize without attempting to put them in words. All these preserving and coloring compounds are foreign to the foods in which they are used, in relation to the digestive processes many are unnatural in their effects, and at best they can only be regarded in the light of emergency expedients. Their well-nigh universal use as carried on in recent years is simply a result of greed and false opinion run rampant; they have been employed lavishly and without discrimination; and, as a consequence, there has resulted demoralization in the manufacture of our foods and beverages. To anyone who will stop to consider the extent of the evil, the situation will at times appear disgusting. Let a manufacturer but devote a day to one of the state food laboratories while these foods and beverages are run through the course of analyses for dyes and antiseptics, and the result will be that he will feel the need of reform in certain methods of preparing foods and drinks. For my part, I have lost much of my relish for soda fountain goods, and it matters not whether they now use the vegetable dyes instead of those of coal-tar origin; I look askance at all so-called brandies or wines, whether intended for common use or for sacramental purposes; and as for these gaudily colored jellies, jams and preserves, I prefer not to think about them more than is absolutely necessary. In many respects we are doubtless superior to our savage ancestors, but when it comes to the use of paints, it has been said that while they painted their faces we now paint our foods. Then, is there not to be considered the consequent staining of our internal organs and the possible ultimate effect on the complexion of the race. So I will say that we are in a stage which, if not barbaric, is at least a survival of the barbaric, and that we have here another illustration of suppression of an evil practice in one form only to find it to crop out at a later though very remote date in another form. The anthropologist will point it out without fail

as one of the curious facts in the history of the race. From the frescoed savage to the consumer of painted and embalmed foods is a long step to be sure, but it is only a step.

And so the situation is difficult as well as interesting and even amusing, for on the one hand is the savage or semi-savage taste and on the other hand the mania for the almighty dollar. The problems involved in the control of acquired political dependencies are not so very different in kind, though they are in degree. There is public sentiment here to set right and there is greed to control; there are broad questions of policy to consider; there is room for the exercise of judgment, and there is constructive work to be done. Nothing can be permanently gained and much may be lost by hasty or radical measures; there is room here for careful thought and study; fairness and due credit are due to all classes who in one way or another may be interested in these questions. I believe the better class of manufacturers realize the need of reforms; they are not working solely for money and many have expended valuable time and means in order to improve their products. The services of science are becoming better understood and appreciated by them, and they are working in harmony with the best ideas that have been evolved. For the time being, and as a step toward better conditions, it seems imperative that the use of these antiseptics and coloring matters should be kept under intelligent control. It seems to me, however, that we should reverse our attitude toward these coloring and preserving compounds; they should be regarded as guilty until proven innocent. The history of this question and present conditions seem to warrant this policy. Let no compound be permitted in a product intended for food or drink unless it is by competent authority pronounced harmless; all compounds concerning which there is doubt or concerning which nothing is known, should not be permitted. In the meantime, however, immediate steps should be taken to restrict the coloring and preserving of foods and beverages. There is unfair discrimination at the present time; these substances are permitted in some classes of products while others are under restriction. There is need of a reclassification, in order that the contemplated reforms may be carried out without undue harm to vested interests; and a good beginning can certainly be made with a large class of products which should be hereafter entirely free from artificial coloring and preservatives, and concerning which it may well be legislated that if they are so adulterated they shall not be sold.

CHAIRMAN BAILEY: In educating the public against these coloring matters, I think the time will come when the people will not want them and will not require them. We will now

hear a discussion of this subject by Mr. H. E. Barnard, State Chemist of New Hampshire.

#### DISCUSSION BY MR. H. E. BARNARD.

MR. BARNARD: I have no paper to present, and but few words to add to the expressions already given. I think one point has been rather lost sight of in the discussion of this matter. The attention of the gentlemen who have presented papers has been directed to the suppression of the use of coloring matter and antiseptics, but of coloring matter more particularly, because of their injurious effects upon the human system. I am inclined to lay much greater stress upon their suppression because we must now consider that the manufacturer almost invariably uses them in order to make an inferior article look like the genuine article, and I think they should be suppressed, not only because they are injurious but because they are fraudulent, because the manufacturer foists upon the American people a fraudulent article, an article not like that which the customer supposes he is buying. We have also colored goods with the dyes extracted from food products, and we have found that the dyes so extracted have been used in manufacturing inferior jellies and jams, inferior drinks, prepared by the use of these colors to counterfeit the genuine article. But we must not forget that we are human beings, advanced beyond the stage where we bolt our food without regard to its appearance, and I think we must concede that there are cases where the use of colors to improve the appearance of goods is beneficial. We take food because it is pleasant to take and because it is agreeable to the eye, and we don't go so far, in New Hampshire at least, as to prohibit absolutely the use of colors in foods, as for instance, in the preparation of some of our dessert articles, which we rely largely upon to make a palatable addition to our food. If the coloring matter is absolutely removed we may have no use for those desserts. Therefore we, in New Hampshire, have ruled that coloring matter shall be prohibited absolutely when used by the manufacturer to deceive. There is no question but that the chemical preservatives are used by the manufacturers of food products to enable them to dispense with cleanly and careful methods of preparation. There is no doubt but that a large class of these preservatives are harmful and that the effects of others are certainly questionable. Therefore until the time when thorough investigations prove the contrary, certainly the only wise thing to do is to prohibit the use of all chemical preservatives. Many of the states have compound clauses which allow the use of a preservative if it is so stated on the label. Now we all know that the class of people who buy these foods, that is, the cheap foods, which are always the preserved foods, come from those who are poor and illiterate—people who are not in-

formed as to the effect of preservatives, and who, if they were, would frequently be unable to read the labels. Therefore it does not seem to me that the use of the label entirely clears the way. When we have shown that public sentiment, backed up by an active enforcement of pure food laws, will not countenance the use of highly colored foods or the use of preservatives in food products, the food manufacturers, it seems to me, will discontinue the use of preservatives and colors and will return to first principles and honest goods.

Mr. President, I have nothing more to add to the remarks of the gentleman who have already so ably spoken, and I will not take longer the time of the convention.

CHAIRMAN BAILEY: The discussion will be continued by Mr. Sebastian Mueller, representing the H. J. Heinz Company.

#### DISCUSSION BY MR. SEBASTIAN MUELLER.

The subject of preservatives and coloring matter is one on which much has been said and written during the last ten years, and during which time radical statements, many void of facts, have been made on either side.

##### PRESERVATIVES.

Every nation has had to deal with this question, and the use of certain artificial preservatives in food products is recognized and permitted in all civilized countries. Such preservatives should never be used as a convenience, however, but should only be employed when all other known means of preservation fail to protect the consumer in securing food products in a healthful condition.

The so-called artificial preservatives are not in the small quantities used the exclusive preserving agent. The real preservatives are the process of cooking and the sugar, salt, vinegar, spices and similar items entering into the composition of food products. The added preservative is used only to prevent the action of certain bacteria which cause mould and fermentation in the finished product. I will only touch lightly on this subject and leave the full details to our chemist, Mr. Mason. It may not be impossible to put up food products without the addition of an artificial preservative, but it is a question if it is practicable, and if it were attempted it would revolutionize the present methods of manufacture. If all preserved foods could be left standing in a cool place and not disturbed until consumed, spoilage could be reduced considerably, but even then it could not be entirely eliminated.

Mould and fermentation are frequently found by the housewife in the goods she herself has put up, and when the home articles are finally taken into use the mould is removed and the good part underneath is eaten. When the home product is found to be fermented it is boiled over and then used, but while the housewife may be willing to remove

the mould from her own goods and boil over the fermented goods which she herself has made, she is not likely to buy mouldy or fermented goods from the grocer. When goods are made on a large scale, although with the same care and cleanliness, you can readily see what will happen when they are shipped over long distances and transported from one climate to another. If any mould has formed before the goods are shipped, the mould will become mixed with the entire contents of the package during transit, and if complete spoilage did not take place on this account, the consumer would be eating mould, which in my opinion is more objectionable than to eat the small and harmless quantity of added preservative required to prevent its formation. Again, if goods were slightly fermented on the top of the package, the bacteria of fermentation would become mixed with the balance during transit and the whole package would go up in fermentation.

Now let us suppose the use of preservatives to be absolutely prohibited. What would be the next step for the average manufacturer to take? He would in many cases resort to the use of tin cans, because they are the cheapest and most convenient package in which perfect sterilization can be had, and because of the process of sterilization all goods keep well until the cans are opened. The tin can would be preferable to anything else; first, because of its small cost; second, there would be no breakage, and therefore practically no loss; but if we look more closely into the use of tin cans for such purposes we find many serious objections. To be sure practically all vegetables and many fruits are put up in tin cans, but it seems doubtful to me if this method of packing should be employed with all products derived from fruits and vegetables. Experiments made on a large scale and carried out on a commercial basis have after a few years' trial proven that fruit preserves and such tomato products as ketchups packed in tin would dissolve an unusual amount of this metal, and I believe it will be conceded that tin in solution would be far more objectionable than the small quantity of added preservative necessary to use in goods packed in stone or glass.

Articles of a more liquid nature, such as ketchup, however, can be successfully sterilized in glass bottles with a narrow neck, but this process means, first of all, an increased cost on account of great breakage caused by the sterilization process. Second, the color and flavor of the product are affected and the goods made less attractive and palatable, and then, after all, when the bottle has finally been opened, the contents will ferment very quickly during warm weather, even within 24 hours, except the bottle be kept on ice until it is placed on the table and immediately returned to the refrigerator after the meal is over, but even then mould could not be prevented for longer than

from five to six days. It is seldom that a bottle of ketchup is used in such a short time. Often a bottle will last from three to four weeks, and sometimes even longer.

In the case of fruit preserves sugar is an absolute preservative, and goods can be made from fruit and granulated sugar so that they will keep during transit without forming mould, but to accomplish this result the product would have to be boiled down to a heavy and unsightly mass, in which the sugar would soon crystallize, and the article would be unsalable. This refers particularly to preserves put up in crocks.

Even if there were to-day a practical wide-mouthed glass package in the market which would stand the treatment of sterilization without incurring heavy loss by breakage, the increased cost of putting such goods up in glass as compared with the lower cost of the same articles in crocks would be a burden upon the consumer. On the other hand, fruit products of a solid composition, such as jelly, which will stay in a solid mass even in transit, do not require a preservative. Only the fruit-products which are semi-liquid in their nature and which are easily stirred when the packages are handled require it.

Now let us come to the preservative itself. The least objectionable one in use to-day seems to be benzoate of soda. It is non-poisonous and does not accumulate in the human system. Moreover it is present naturally in marked quantities in some fruits, and particularly in our cranberry. It has been prescribed in large quantities by physicians of renown. In a recently published book by Samuel Rideal, D. S., formerly examiner in chemistry to the Royal College of Physicians, and lecturer in chemistry, St. George's Hospital Medical School, London, England, which book has been favorably commented upon in the Journal of the American Chemical Society by Dr. John Marshall, professor of chemistry in the Medical Department of the University of Pennsylvania, as one which recommends itself in the highest degree to chemists in the subjects of which it treats, as well as to inspectors of meat, milk and food stuffs in general, it is quoted that benzoate of soda would seem to be an unobjectionable preservative. Reference is also made in this book to a number of cases in which physicians have prescribed for patients suffering with rheumatism large doses of benzoate of soda, and Professor Dr. H. Senator is mentioned as having prescribed for one of his patients a daily quantity of 50 grams, or 750 grains, the dose being continued from 12 to 14 days. I was so interested in this statement that I weighed the total quantity of sodium benzoate on the scale, and when I saw the great bulk of it—700 grams, or nearly 1½ pounds—I concluded that it was an impossibility for a person to take such a quantity in such a short time. I at once wrote to Professor Senator

at Berlin and referred to the quotation in the book. I received an immediate reply, in which it was stated that a mistake had been made in printing and that the quantity should read 15 grams instead of 50, but in the same communication the Doctor mentioned that a colleague of his, Dr. Klebs, had prescribed daily doses up to 25 grams and that this treatment was continued from 12 to 14 days, making a total quantity for the 14 days of 350 grams, or 5,495 grains, our weight. The maximum quantity prescribed by Dr. Senator during the 14 days was 210 grams, or 3,297 grains. In all these cases where large doses have been given it is stated that no ill after effects have been noticed.

Of all table condiments with which I am acquainted only a few seem to require the addition of a preservative, and these are the products of tomatoes packed in glass and of fruit packed in glass, crocks and wood. From inquiries in many families, including my own, I have arrived at the conclusion that it may be safely assumed, figuring on a consuming population of fifty millions of people in this country old enough to eat these products, that the per capita consumption does not exceed 3 pints of tomato ketchup and 10 pounds of products derived from fruit per annum. The extreme quantity of benzoate of soda which would possibly be used in tomato products would not exceed the proportion of 1 to 500. The extreme quantity of this same preservative in products derived from fruits need not exceed the proportion of 1 to 1,000—in many cases not more than 1 to 1,500, and in winter not more than 1 to 2,000. This would give a total annual quantity of benzoate of soda per capita in these products of about  $7\frac{1}{2}$  grams, or 118 grains. In other words, it would take a person almost 50 years to take the same quantity of benzoate of soda in the food articles mentioned that authorities prescribe in a case of rheumatism during a period of 14 days, or one would take in a single daily dose prescribed by these physicians more than three times as much benzoate of soda as would be taken in these food articles in one year.

If we subdivide this quantity of  $7\frac{1}{2}$  grams into daily doses, we find that one would take during every day of the year not to exceed an average of 1-3 of 1 grain. Assuming that the average person takes not less than 3 pounds of various kinds of food during 24 hours, the total of this weight figured out in grains would be approximately 21,000, and therefore the proportion of preservative to the whole would be 1 in 63,000. This quantity is so insignificant as to allay all fears of possible interference with any digestive process.

#### COLORING MATTER.

I have nothing to say in the defense of coloring matter. It has been used in many products derived from vegetables and fruits where the goods

were otherwise pure for the purpose of either preserving the color obtained after the process of preparation or to regain the original color of the raw material, so as to make the product more attractive to the eye and therefore more palatable. But since artificial coloring matter, even though it be harmless, is also largely used to cover up adulteration which would be apparent to the consumer without its addition, it seems advisable that the use of artificial coloring matter should be discontinued.

I do not know that there is any more important and more practical question before this congress than the subject of preservatives and coloring matter, and I believe that an agreement should be reached which would outline a policy of procedure by which the food commissioners of all states and the manufacturers would be guided, until such time as a national law on this subject could be passed and all state laws could be so changed as to conform to it.

I believe every honest manufacturer would say with me to-day that your work of the past has not only benefited the consumer, but it has also helped the manufacturer. However, there are a great many problems yet to be solved, and we are asking the help and co-operation of every chemist in the food work to make the existing conditions more ideal. I am sure every manufacturer should be glad to receive your suggestions along any line and at any time.

I sincerely hope that we may all live long enough to see such progress made in the manufacturing of food products that preservatives have either become unnecessary or their presence in some food products is desired to protect the public health.

CHAIRMAN BAILEY: That is just the kind of discussions and papers we like to listen to. I tell you, the manufacturer and consumer and the commissioners are getting together every day, and as this work goes on and we get closer to the manufacturers we can do business with them, and do it without any trouble. I have no doubt of that.

We will now hear from Mr. Glen F. Mason, also connected with the Heinz company.

#### DISCUSSION OF MR. GLEN F. MASON.

##### THE USE OF PRESERVATIVES IN FRUIT PRODUCTS.

The necessity of a preservative in fruit and vegetable products has been called to my attention upon numerous occasions in connection with work in the laboratory during the past year. Tomato products were used as a basis for research in a great many instances. Every possible means of preserving with none but natural agencies were used, but without satisfactory results. Tomatoes were pulped in the laboratory, the bottles thoroughly sterilized, and then filled to top with pulp, corked and sealed. These kept for about 60 hours

and then one after the other blew out cork and set in a rapid fermentation. The same scheme was tried again, the pulp being put in cold storage. In a comparatively short time this lot also fermented.

The same is true with fruits, where in most cases fermentation takes place much more rapidly, although some fruits may stand exposed for some time without changing. This subject will be taken up later.

To return to tomato products, we will take up again their rapid decomposition. The tomato during the process of ripening, will in most instances, split or break open at the stem. Mould grows in the cavity, and in time the organism is disseminated throughout the fruit. In this way the organisms establish themselves before the picking season. Now if it is possible that this organism can become only inactive at the temperature of pulping (about 212 degrees Fah.) and as the mass cools down, revive, it might start a fermentation, the heat of which would render cold storage useless. I am positive that no substance capable of inducing fermentation comes in contact with pulp after it reaches my hands. So therefore, I consider a preservative a necessity in this case.

When the question of which preservative should be used, I think all agree on Benzoate of Soda. Most of the ordinary chemical preservatives which have the power to preserve these articles are more or less injurious to the human system. According to the following authorities, Benzoate of Soda is not poisonous. Dr. Elias H. Bartley, professor of chemistry and toxicology in Long Island College; dean and professor of organic chemistry in the Brooklyn College of Pharmacy; late consulting chemist to the Department of Health of the City of Brooklyn, etc., says in his "Text Book of Medical and Pharmaceutical Chemistry": "The benzoates may be taken internally without harm."

Dr. Samuel Rideal, public analyst of Lewisham District Board of Works, fellow of University College, London, etc., says in his "Disinfection and the Preservation of Food," in speaking of Benzoate of Soda: "It is not poisonous." He also mentions other benzoates which may be taken internally without harm. Records are available where exceptionally large doses of Benzoate of Soda have been given without any ill effects.

Dr. Senator of Berlin has prescribed as much as 15 grams to a patient who took this amount for 14 consecutive days without injurious effects.

Experiments this spring showed it to take one part Benzoate of Soda in 200 to destroy the peptic digestion. Here it worked with one-third of the rapidity of the blank, but stopped completely when two-thirds complete, after an action of 72 hours.

Bucholtz found that 1 part Benzoate of Soda in 1,000 stopped the growth of micro-organisms. Jean de la Croix found 1 part Benzoate of Soda in 2,800 would prevent bacterial growth in an extract of

beef. Gosselin and Robin administered 1 to 4 grams per day without injurious effects. Many other instances could be quoted if time would permit.

But these, I think, are sufficient to show that Benzoate of Soda can be taken without injurious effects and therefore could not be called a poison. I know of no case on record where death or even serious illness was caused by Benzoate of Soda and I see no reason why it should not be preferable to any other chemical preservative.

It is common knowledge that salicylic acid is detrimental to digestion in even very small quantities. Dr. Bartley says: "Salicylic acid is sometimes added to wines, beer and other articles of food, as a preservative, a use which should be prohibited." We know that it is a great deal more powerful than benzoic acid in arresting the action of enzymes. One part of salicylic acid in 9,000 will stop the action of pancreatic enzyme, while it takes 1 part of benzoic acid in 2,600 to accomplish the same results.

It has been stated by competent authority that salicylic acid produces chronic dyspepsia. No such results have ever been tabulated against benzoic acid. Numerous other preservatives have all such records; but nowhere will you find benzoic acid spoken of as a poison.

In case a preservative was not used in an easily fermentable article, what would be the result? The consumer would be eating various moulds and introducing bacteria into his system by the millions. Everyone knows that a human being cannot relish moulds such as are formed upon various fruits. But you say these are of no importance as they are on the top and can be removed without any injurious effect upon the preserves or other product on which they grew. This may be true in the case of "home made" preserves where it remains in the cellar or pantry without being molested until ready for consumption.

The commercial preserves are shipped from one climate to another, usually going through somewhat sudden changes of temperature and shaken up in every conceivable way; and in the meantime the mould, if any, which had been resting peacefully on top is mixed thoroughly with the rest of the fruit. Fermentation will soon set in by the constant, or almost constant, circulation of air, through the preserves, caused by constant changing of box from one spot to another. Then you have the absolutely pure preserves, free from preservatives, as they would very often reach the consumer. No one would take them in preference to the nice, clean looking preserves, absolutely free from fermentation, containing only a very small amount of Benzoate of Soda. Although none of the moulds found upon fruits have as yet been proven as poisons in the strictest sense of the word, yet none of them are considered perfectly harm-

less, and all know them to produce digestive disturbances. They are not pleasing to the eye by any means. I have collected moulds grown upon fruits, free from preservatives, which have been kept in screw top jars. A person would not have to look long at them to lose their appetite, and merely from appearances would reject the fruit.

Would it not be better to use a little S. B. and do away with these objectionable things? Take the substance we eat every day. All contain compounds which, if isolated, we would hesitate to consume.

According to Messrs Traphagen and Burke, of Montana, salicylic acid is found in strawberries, plums, currants, red and black raspberries, black cherries, apricots, peaches, Concord grapes, crab apples and oranges; the amount of this acid is small, in fact so small that the re-action will not take place in some instances when the ordinary tests are applied, in fact, of the small amount of the sample at the analyst's disposal. I obtained the reaction by distilling the fruit with phosphoric acid, extracting the distillate with ether and testing the ethereal residue in the usual manner with ferric chloride.

Benzoic acid occurs in comparatively large amounts in cranberries. I have carried out experiments on this question until I have utterly exhausted my resources. My results indicate that in good ripe berries benzoic acid exists in about 1 to 2,000. I was very much surprised to see the large amount existing there when I first tested them and immediately commenced to purchase cranberries wherever I saw them for sale. The amounts differed but little in the different berries. Then the growers were suspected of spraying the bogs with some commercial mixture containing benzoic acid. To prove or disprove this, every reliable cranberry grower whose name we could get, was written to and all answers were in the negative form. That is, all stated that no spraying mixture whatever was used on their bogs. I then procured large amounts of unripe berries and vines, some berries still on the vines, from different sections of the cranberry territory and tested them for benzoic acid. Experiments on vines were not successful, but some are in progress now which will undoubtedly settle the question in my mind if it is present in the vines. On the other hand, experiments on the green or unripe berries were very satisfactory. Smaller amounts of benzoic acid were found than in the ripe fruit, in every instance, showing the acid to be forming during the process of ripening. In no instance did we get negative results. Even in the very small berries, the largest of which was about the size of a pea, I procured crystals of pure benzoic acid. The cranberries tested were from New Jersey, Cape Cod and Wisconsin. These experiments will be

carried on until the berries become over-ripe in the late fall.

When we consider the millions of bushels of cranberries consumed in the world every year, the amount of benzoic acid consumed in that way alone is enormous, and no one, as far as I can ascertain, has met with any ill effects by eating cranberries. In fact, several with whom I have talked concerning this, say cranberries benefit them. Of course, I am not claiming the benefits are due entirely to the benzoic acid contained therein, but it shows it produces no disastrous results as some people would think. The fact that benzoic acid occurs in cranberries in such quantities, in fact, quantities as large, if not larger, than that necessary to protect preserves from fermentation, is quite an item in favor of the use of this article in fruit products where nature has neglected to place it.

If we do not use a preservative and wish to prevent mould and fermentation, we will have to be restored to tin cans. Here the fruit acids come into play. They gradually dissolve the tin from the cans, and the lead and zinc from the solder. Apples, peaches and strawberries seem to have more of a tendency to dissolve the tin than other fruits, although in no instance did I fail to find tin in fruits which had been in the can for several months or more. In canned apple butter about thirteen months old I found as high as 430 milligrams of tin per kilogram of fruit. In peaches thirteen months old, 425 milligrams per kilogram were found. In strawberries one year old, 360 milligrams per kilogram. In canned pineapple as high as 217 milligrams per kilogram. Raspberries contained a maximum of 471 milligrams per kilogram. In nearly every case I was able to get traces of zinc, and in several cases determined it quantitatively, as in peaches where 112 milligrams per kilogram were found.

This is one of the most objectionable features in regard to canned fruit preserves. Other bad features display themselves as resulting from sterilization. The true fruit flavor is lost to a large extent; the sugar is partially caramelized and the color destroyed. When all these objectionable features are taken into consideration, I think we would all prefer our fruits in other receptacles than tin cans. The amount of tin consumed in a given amount of canned fruit would undoubtedly do a great deal more injury to the human system than the quantity of benzoic acid consumed in the same amount of fruit which had been preserved and put up in glass, still possessing its original flavor, color and appetizing appearance. From these results I naturally conclude that fruits cannot be put up in tin cans and meet the approval of the public in quality. They demand preserves which have all the properties of the fresh fruit, and prefer every time to see what they are buying,

and thus necessitating the use of glass which will almost invariably mean the presence of a preservative in the substance.

It seems to me that S. B. in such quantities as consumed by an individual in condiments cannot be injurious to the human system; and we can all be positive it would not be near as injurious as condiments put up without S. B., which are usually kept on the table for some time, producing ferments and moulds, and not having proper attention paid to them are often consumed in that state.

CHAIRMAN BAILEY: I would like to ask Mr. Mason one question for my own information, that I may be set right: I understood him to say that benzoate of soda is not considered poisonous. Is that correct?

MR. MASON: According to the authorities that I quoted, it is not.

CHAIRMAN BAILEY: Where does it get its preserving qualities if it is not a poison?

MR. MASON: That is, it is not detrimental to the human system. That is the explanation they offer.

CHAIRMAN BAILEY: That is the case with very many of the poisons. You can take a certain amount of strychnine and it will pass out of the system. But what are its preserving qualities if it is not poisonous?

MR. MASON: Well, of course, it is taken as a general fact that anything that will prevent the action of an enzyme is naturally called a poison. Now, I quoted these authorities as mentioning these facts. They are much older men than I and of course have had much more experience than I have and they mention the effect of benzoate of soda and in connection with that they mention that it is not poisonous and that benzoates may be taken internally without harm. I have not made experiments enough to show that it is absolutely non-poisonous.

CHAIRMAN BAILEY: I concede you can take a certain amount without being poisoned.

MR. MUELLER: I believe I can answer that question, Mr. Chairman. The U. S. Pharmacopoeia holds that any drug which cannot be prescribed in doses larger than 16 grams a day is considered a poison.

CHAIRMAN BAILEY: Some people can take a larger proportion than others and not be poisoned.

MR. MUELLER: Everything is a poison. You take the concentrated vinegar, salicylic acid, and you dare not put a drop in your palate.

CHAIRMAN BAILEY: Then the question is, why not call them all poisonous, and let it go at that?

MR. MUELLER: They are not poisonous.

MR. MCPHERSON: There is another thing mentioned by the speaker that I would like to

ask a question about. Do I understand from what you say in regard to analyzing foods put in tin cans that they do break out in lead or tin or zinc more or less as they age?

MR. MASON: That is, that they dissolve more tin or zinc as they age?

MR. MCPHERSON: Yes.

MR. MASON: I have not reached a maximum age on them, but I find the older the fruit is the more tin and zinc and lead I can detect.

MR. MCPHERSON: I simply ask it because a year ago the Idaho law had a proviso in it that all goods put up in cans must be stamped with the year the can is put up, and I brought that up a year ago and the consensus of opinion of the chemists and authorities was that it was not true, and that it did not break down or take up the tin and zinc and that it could go on for a hundred years without making any difference. I therefore went back to Idaho and asked the Attorney General to save me from disgrace in trying to enforce that law, but according to what this gentleman says I may have made a mistake. Now I would dislike to go back and tell the people of Idaho that I lied to them, because I lied to them honestly if I did. This is a question I would like to have settled.

MR. MUELLER: I think the chief objection that you would meet with in demanding that every tin can should be stamped with the year and date when it was put up, is this: the average canner buys his cans when the season opens and has the cans stored in his factory. The cans cannot be stamped after they are made. If the crop should be short in 1904 and they haven't enough stuff to fill them this year and they are kept over and filled in 1905, they would be wrongly stamped. We are stamping many of our cans already. We put the stamp on the cap which is soldered on and we stamp the cans every day as we put up the goods and put the date on, so that if there is any trouble comes up we will know the date it was put up, but we cannot put it on the can itself.

MR. MCPHERSON: Wyoming requires the same thing. Now I wish to explain this: Our country is a mountainous country and goods have to be transported long distances, sometimes on pack trains, and when they get goods up into those camps they are put in caches and sometimes it is ten years before they are used. Now we have sometimes found what is called ptomaine poisoning and they did find tin, copper and zinc in the stomachs of the men who died from eating these goods. Now this will have to come up in our legislature this winter. Senator Heyburn, of Idaho, is the chairman of the pure food committee in the senate, and he spoke to me about this the other day, and it is something I would like to have settled. Dr.

Wiley said that they had requested foreign manufacturers of wine to put on the year of the vintage, and why wouldn't it be proper to have manufacturers of canned goods stamp on them the year they are put up?

MR. MUELLER: We had a state law prepared in our own state where it was demanded that the date when the goods were put up should be stamped on the can or blown in the bottle. Now, that would not be right, because manufacturers carry bottles and cans over from one year to another and the bottle or can might indicate goods packed in 1904 when they were really put up in 1905.

MR. MCPHERSON: It is not a question with me whether it would injure the manufacturer or not to have a few more cans or blow a few more bottles or stamp a few more covers. Isn't it a fact that goods put up in tin cans become deleterious to health, and from the very nature of things, if that is true, I shall insist on that section being enforced; but if it is not true I want to know it. A year ago they told me it was not true.

MR. MUELLER: I am not prepared to answer that question to-day. We have in connection with our factory a laboratory for chemical research and this is one of the things we have under consideration and it would be premature to say to-day whether that is the case or not. I think there is to-day no more important question than the regulation of the making of tin plate in which food products are to be put up. I think it is more important than the question of coloring matter or preservatives, because all these table condiments we have been talking about do not compare in magnitude with the canned goods product. We should have a minimum amount of tin plate fixed in this country for food products, and let a man put in as much more as he wants to. I think the German and French governments have laws to that effect.

MR. MCPHERSON: I don't wish to take up any more time, but this is a pertinent question to me and I came here to learn. I came as far as the chairman did, and I have no time to fool away, but this is a matter I have tried to explain to my people. They have asked me why I didn't enforce paragraph 8, section 26, and I tried to explain that it would cause a hardship, and as I understood it, getting my information from reliable men as I supposed, in St. Paul last year, that goods put up in tin cans where the tin was inferior, it would become deleterious to health in a few months, while those that were put up in first-class tin, good whole tin, and soldered up with that, it would not become deleterious to health in twenty years, perhaps. Now I make this statement, that if every can that had a stamp on the end of it

would give it a certificate of character, if there were any bun goods without that certificate of character, those were what I wanted to bar out. If it is not true, it is all right and nobody would ask any question about it; but if it is true that they do become deleterious to health, I want to know it now, and not only that, but all the other commissioners ought to be set right.

MR. MUELLER: Some time ago I read an account of a gentleman who is a professor at the University of Pittsburg, a Bavarian, and he said that good tin plate is an absolutely safe package to put in food products, providing the sheet iron is sufficiently covered with tin, but if it is not sufficiently covered, as we often find, it is not. In some cans the tin is so bad you can see almost with the naked eye the iron sticking out, and when you go to the can makers, they tell you they sell the cans for low prices and they are compelled to use cheaper materials to keep down the price. We are ready now to commence making our own cans on that account, and have our own tin plate made and put in as much as we want to. We do not have to buy it in the open market, but have it made to order. So that you are right on this thing. We all believe there is something lacking in the making of tin plate for use in packing food products.

PROF. LEACH: With reference to the question of the gentleman from Idaho, some three or four years ago our force in Massachusetts made some experiments on the action of fruit acids on tin, all of which are recorded in the past records, with a view of finding out the effect of time on the amount of tin dissolved. We mixed up a great many fruit acids of the same strength as the acids in the fruits themselves and we canned them in glass jars with the amount of tin plate in the glass jars corresponding to the interior surface of the tin can, trying to get the very same quality of tin plate used by one of the leading canners, and we found at that time that amount the maximum amount of tin seemed to be dissolved in six months. We made quantitative examinations in one month, three months, six months and a year after it had been lying in this can, as near as possible under the conditions of the canner, hermetically sealed, and we seemed to gather from the result of the experiments that those materials in most cases dissolved as much tin as would be dissolved in a year, and that some took the maximum.

MR. HOBBS: I can offer something in regard to this tin question which is not generally known. In my commercial line of work various qualities of tin come into my hands. This Bolivian tin, which can be used as a second coating of tin plate, contains 12 to 18 per cent

of foreign ingredients. Some of those ingredients are bismuth, antimony, silica, iron, and so forth. The electrolytic action set up by this class of tin plate is certainly much greater than that which is set up by the pure tin plate put upon the market. It is the Bolivian tin plate which is causing the most of the trouble.

CHAIRMAN BAILEY: As I understand it, it is the quality of the tin plate, and not the time, that causes the injurious effect.

PROF. LEACH: The maker does not use so much of the turned plate, you understand, but it is a poor quality of tin that is used in the canning industry, in the East at least, so that it really amounts to a question of the effect of the acid on the tin itself. Of course, the iron should be covered.

MR. MCPHERSON: You see the importance of this to us. I suppose there have been at least fifteen people died in our state last year from eating canned goods. Some claimed up in the mining camps that they died on account of the tin or lead or whatever laid inside the can; some said they were poisoned by preservatives, and so on, and it made it very disagreeable, and therefore I had to dig up one man after he had been buried two weeks and send his stomach to Mr. Harms. He found tin, lead and copper. He had been eating canned goods, but, according to Mr. Harms, it was ptomaine poison that killed him. We find this same question coming up in Wyoming, and even in Washington, and Mr. Bailey will have this very thing up this winter. If there is any more light to be had on this subject I would like to have it. It is worth my trip coming here if I can find out, but I don't want to be fooled.

CHAIRMAN BAILEY: We believe in getting right to the bottom of this matter, and we would like to know if there is any reason why the manufacturer should not use the proper quality of tin plate. I would also like to know this: is it deleterious for canned meat to stay in the tin a certain length of time after it is put up?

MR. MALLET: I made some experiments several years ago of this kind. The simple point is, use pure tin and in sufficient quantities. There are four metals concerned more or less—zinc, lead, tin and iron. So far as zinc is concerned, it comes, not from any metallic state, but from the plate of zinc used to facilitate soldering, and if the soldering is properly done none of it ought to get into the can. A coating made from tin alloyed with lead should never be permitted. Lead is unquestionably poisonous, and ought not to be allowed as a constituent of the tin. The so-called turn plate is made of an alloy of lead and tin and ought to be prohibited. Pure tin is in a very slight degree injurious. The action of the acids on

it is very gradual and appears to attain a maximum; after a certain time the amount of tin will not increase. So far as the iron is concerned, the iron is not injurious at all, but if the tin becomes eaten through or removed because it is not thick enough, the iron rusts and holes are made and the air is admitted and the contents spoil. Perfectly pure tin, and a sufficiently thick covering to secure protection so that the iron is not exposed, is essential.

CHAIRMAN BAILEY: Then your idea is that the law should be aimed at the manufacturer of tin?

MR. MALLET: The manufacturer will make it as he is directed to. The packer should be held responsible for the tin he puts into his cans.

PROF. LEACH: I would like to ask the gentleman if turn plate is used to any extent? My opinion is that it is not, but that the quality of tin used is a fair quality, and turn plate is very seldom used.

MR. MALLET: I think that is right. I saw these several years ago, and they were old at that time.

MR. COBB: I am a manufacturer of canned goods with about twenty-five years' experience. In the first place, I have eaten canned goods twenty years old, and I know without any serious effect, and we put up nothing that I won't eat myself. I will say this with reference to tin: nothing is used but coated plates; no turn plates are used within my knowledge. In the manufacture of tin plate it used to be that about four pounds of tin was used for coating 100 pounds of sheet; now, I think the manufacturer of tin plate uses about  $2\frac{1}{4}$  pounds, varying from that to  $2\frac{1}{2}$  pounds, to 100 pounds, and if goods are properly sterilized and properly processed the decomposition is arrested and there is no danger of poisoning; the goods ought to be as good five years or ten years thereafter as at the time they are put up. Now, one of the dangers in reference to light tin coating comes from an exterior exposure—that is, the canned goods rust if placed in a pile on a day when the temperature is like it is today; they will sweat, and then as the temperature goes down this sweat on the cans will rust them and eat through. Now, take especially canned apples; they are very subject to being eaten through by pinholes in the tin. Now, different kinds of canned goods vary in their susceptibility that they have toward tin, or, rather, in the ability to dissolve it. In apples, I believe mallic acid is the action in them; that attacks the tin to a certain degree, and so with reference to certain other fruits, some are of greater danger than others. I understand corn, succotash and peas do not attack the tin, but as I understand from recent experiments,

the solution becomes a saturated one within a short time—that is, it takes up all the tin in process that it can take up. Very much of the talk about poisoning from canned goods which has existed for many years comes from cases where people have opened a can, for instance, of tomatoes and consumed a portion of the product and left the balance in the can and consumed the balance on the day thereafter. All canned goods should be immediately taken from the cans. Furthermore, when there is anything wrong with the contents of a can, if there is any fermentation going on there, the ends of the can will bulge, and nearly every consumer knows that fact, although in some sections of the country where they are put into caches and not opened for years, they may not know it. We have had before the legislature of New York year after year that question come up of dating goods, and all I can say regarding it is that it is believed no particular object would be gained as yet, at least until something further can be shown.

PROF. SHEPARD: The thought has occurred to me that as we get better acquainted and we get to understand each other better—and we are getting closer and closer together all the while, and these conferences do us all good; but we must all bear this in mind, Mr. President, that the consumer is the man that must be satisfied at last, and we must regard that as a fundamental principle; and in our arguments one way and the other it seems to me as if it might be well at this time to sound a note of warning in regard to one little thing that we see the trade journals especially are trying to make a great deal of, and that is, they say, “Here, it has been determined now that salicylic acid and benzoic acid have been found in natural food products in minute quantities. Now what does that mean? Why, that means it is natural.” Whatever that might mean, and I am rather afraid that more significance is being attached to that fact than it really deserves. I don’t think it is capable of being pushed to any very great extent, and I don’t think it has very much bearing on the subject.

A recess was then taken until 1:30 o’clock p. m.

Wednesday, September 28th.

Congress met pursuant to adjournment at 1:30 o’clock p. m.

CHAIRMAN BAILEY: I am going to ask Commissioner Jones to take my place this afternoon, as I am rather tired and not feeling well, and Mr. Jones has consented to act as chairman this afternoon.

CHAIRMAN JONES: We will first be addressed for a few minutes by Mr. Edward W.

Duckwall, Bacteriologist Director of the Sprague Cannery Laboratory, and member of the American Chemical Society.

MR. DUCKWALL: Mr. President and members of the Congress: I was much interested in the question of tin plate discussed this morning. I have had the privilege of examining a large number of cans after the goods had been packed and stood for a long time, and I found that, as was stated this morning, some of the tin plate was of such very poor quality that it became rusted from the outside, and the acid of the fruit acting on the tin from the inside caused inflation, and naturally such fruit would spoil; but supplementing what Mr. Leach of Massachusetts said, we found from our investigations in the laboratory that after about four to six months the action of the acid ceased, so that there would be really no danger after six months. Our laboratory is conducted in the interests of the whole canning industry, and is not under any particular organization. The character of the work done there is simply on the educational line, and we are not paid by any corporation for any of our work. We seek to simply obtain the truth as we find it, and I will read you a few of the results we have obtained.

#### ADDRESS OF EDWARD W. DUCKWALL.

The Sprague Cannery Laboratory is an institution which was founded by the Sprague Canning Machinery Co., and is supported and maintained by them, and a large number of canners and manufacturers of food products. The work done in this laboratory is endorsed by these manufacturers with the object of solving all the complicated problems pertaining to their business. Among other things preservatives have been carefully studied to ascertain so far as possible their necessity in food products, and their effect upon the human organism by direct observation, and by administering stated amounts to human beings and animals.

There is a class of goods manufactured all over the United States which embraces such condiments as Tomato Catsup, Chili Sauce, Tomato Chutney, Tomato Sauces, Preserves, Jams, Fruit Butters, etc., all of which are used only in limited quantities, sparingly, irregularly, and are intended to improve the taste and flavor of other foods. They do not enter into immediate consumption and are not eaten by themselves and form only a limited proportion of the amount of regular foods which are commonly used in daily life.

These condiments are therefore carried over from one meal to another, and single packages appear on the table for several successive days before the contents are entirely consumed. The public

expects them to remain in an unfermented condition until they are consumed. Such goods, however, are extremely liable to fermentation and various degrees of decomposition, so that a preservative of some kind is absolutely necessary to merely inhibit the growth and multiplication of microorganisms. Preservatives are never used in amounts sufficient to be germicidal, and are always added during the cooking in order to prevent the first stages of decomposition. They are never used to check processes of decomposition, which have already started, because no such amounts as would be necessary to do this could be used without destroying the flavor and rendering the goods absolutely unfit for use.

All manufacturers will agree that it is possible to prepare such table condiments without adding preservatives, by simply sealing them hermetically, and then sterilizing them just the same as canned goods, but such goods do not give general satisfaction for the reason that the flavor is greatly injured by complete sterilization, and such goods spoil rapidly after opening, because they are not consumed at a single meal, and containing no preservative, various species of bacteria, molds, and yeasts find therein a suitable substratum for multiplication, and cleavage processes follow quickly. Just as soon as the container is opened, the condiment becomes contaminated by germs from the air. Usually molds are first to appear, and later putrefactive organisms.

Some of the molds which grow on acid condiments are pathogenic. The most common mold is *penicillium glaucum*, and it is stated, "That its growth produces a phenol-like body which in large doses produces headache, vertigo, and even impairs sight." (Bulletin No. 13, U. S. Department of Agriculture, page 1335.) This fungus is not nearly so pathogenic as these five molds which I have growing in test tubes. These are *Aspergillus Niger*, *Mucor Corymbifer*, *Aspergillus Fumigatus*, *Mucor Rhizopodiformis*, and *Aspergillus Flavescens*, and have all been isolated from tomato and fruit products. All these molds are pathogenic, and cause the death of small animals after injection of the spores. (Laboratory Work in Bacteriology by Novy.) There are several common putrefactive organisms which follow the molds, and these produce ptomaines, some of them quite poisonous, others which cause severe intestinal complications, accompanied with cramps, diarrhoea and cold extremities. Among these may be mentioned *Proteus Vulgaris*, *Proteus Mirabilis*, *Proteus Zenkeri* and others, some of which I have isolated from food products and have here in test tubes.

The number of reported cases of ptomaine poisoning are increasing, according to the daily papers, and we are treading on dangerous ground when we prohibit the employment of preserva-

tives in certain foods, which are liable to infection by these poisonous molds and bacteria. I have two common preservatives here, salicylate of sodium, and benzoate of sodium. You will notice that I do not hesitate to take five grains of each on my tongue and swallow them, but I could not be induced to eat any food which contained these poisonous molds and bacteria, and I do not believe that any of the bitterest opponents of these two preservatives would hesitate in making the same choice. Anyone who prefers the living microorganisms to the preservatives is extended an invitation to demonstrate his preference.

We do not claim that these poisonous hyphomycetes and schizomycetes are always present in goods undergoing chemical change, but we do claim that they are not uncommon. We have found them very often, and you will also be able to isolate them and test their pathogenic powers on animals, and learn the truth of these statements for yourselves.

By elaborate chemical analyses described in Cellular Toxin by Vaughn and Novy, the toxins and ptomaines excreted by various microorganisms may be extracted and their properties may be tested. To be sure, there are more of such substances found in meats, fish, cheese and milk, than in vegetable and fruit condiments, but the fact remains that they are often formed in such foods. (Cellular Toxins, Vaughn and Novy, page 29.)

The preservatives which are used ordinarily in food products are never used in sufficient quantities to destroy bacteria, molds and yeasts. Only enough is used to inhibit their growth and multiplication. Molds of various kinds are the most troublesome, and are the principal cause of fermentation, particularly so with condiments made from tomatoes; such products as preserves, jellies, jams and fruit butters are also liable to fermentation by the growth of molds belonging principally to the mucors.

The mold plant grows on the surface and spreads its mycelium, entirely covering the contents of the package, and in this form of growth does not cause fermentation. From the mycelium arise the fruit hyphae, at the top of which clusters of the seed forms develop, and these seed forms are called conidia or gonidia. These are very minute cells, each one able to produce a new mold plant whenever it falls upon a suitable nutrient substratum.

When mold grows on the surface it obtains all its necessary oxygen from the air, and it consumes large quantities, but if for any reason it is submerged below the surface of the material upon which it is growing, a fermentation is set up which resembles in many respects that of the true yeasts. The atmospheric oxygen thus cut

off is no longer available, and that very necessary element must be obtained by the mold fungus from molecules of matter which contain oxygen. The tearing apart of the atoms comprising the molecules, causes fermentation. The conidia, or seed forms, are thus endowed with a dual biological nature, being able under some conditions to produce mold plants, and also under other conditions to start fermentation by the process of reproduction called germination or budding.

There are very few preservatives which have the power to prevent the growth of molds on such food products as we have described. Those most commonly used are salicylic acid and benzoate of sodium. In tomato products the quantity necessary to inhibit the growth of molds is about one in five hundred. It is never necessary to use more than this quantity, and rarely is it necessary to use more than one in seven hundred and fifty. For fruit preserves and apple butters the proportion is rarely more than one in a thousand, and in certain seasons one in two thousand is all that is required.

There are no other preservatives known which have any value for preserving these products excepting those which are well-known poisons and which could not be used in food. We are aware that some authorities have claimed that salicylic acid is a poison, and some have even ventured to claim that benzoic acid is a poison, but there is room for considerable doubt, as we hope to be able to demonstrate.

One of the strongest claims made by various authorities was that these two preservatives would stop the process of digestion in the stomach. Various authorities have made the statement that since these preservatives were able to stop fermentation they must necessarily accomplish that same result in the stomach of the human organism. The error in this kind of logic lies in the fact that they failed to make a differentiation between fermentation accomplished by microorganisms or organized ferments, and the enzymes of digestion. The principal enzyme in the gastric juice is pepsin, which accomplishes the digestion of albumen in the presence of free hydrochloric acid. This is supplied by the cells in the mucous membrane of the stomach. The claim was made that such a delicate structure as the mucous membrane of the stomach must necessarily become irritated or inflamed by such chemicals as salicylic acid and benzoic acid.

In order to determine the truth of this statement we decided to carry on a series of experiments in the laboratory. We used pepsin whose activity was sufficient to digest twenty-five hundred times its weight of albumen in the presence of 0.2% solution of hydrochloric acid when kept at a temperature of 105° Fahrenheit, and frequently agitated for six hours. Having ascer-

tained the digestive power of the sample of pepsin we made our experiments first with the finely divided coagulated white of an egg 12½ grams, 125 c.c. of water acidulated with 0.2% hydrochloric acid, and 0.005 of a gram of pepsin. Into a number of flasks thus prepared we placed quantities of salicylic acid and benzoic acid in the proportion of one to five hundred. Also in other flasks the same amount of common salt, tea, coffee and alcohol. We found after maintaining these flasks at 105° Fahr. and agitated for six hours, that the flask, which had simply the pepsin, had completed the digestion of the egg, while all of the balance were somewhat retarded, but those flasks which contained the benzoic and salicylic acid had almost completed the digestion of the albumen, only a few flakes remaining. The flask containing salt was fully as much retarded, and those which contained tea and coffee were retarded still more. Our conclusions therefore are that these preservatives, even when used in amounts as great as one to five hundred, cannot stop the digestion of albumen in the stomach, and that they merely retard it to some extent, but not more than common salt, tea, coffee and alcohol and other substances which enter into a regular diet.

The amount of preservative used in this experiment is far greater than anyone would ever take. There would probably be not more than one condiment used on the table at a single meal, and only a small portion of this would be used by anyone. In further experiments we found that small quantities of these preservatives assisted digestion.

Oppenheimer declares that all acids stimulate digestion and this, of course, would apply to these two. The diastatic digestion or the digestion of starch by the ptyalin of the saliva is found to be entirely stopped by large quantities of both salicylic and benzoic acids, but we know that any acid has the same effect on the ptyalin, even the juice of a lemon or an orange; vegetables prepared with vinegars and acid drinks, all have a retarding influence on diastatic digestion.

It is not fair therefore to infer that we are injured by these preservatives simply because they retard this enzyme. Our natural economy is not so liable to be upset as this. The argument advanced that these chemicals might be cumulative has, of course, been overthrown by recent research, and they are known to be decomposed in the stomach, part passing off through the sweat glands and part are excreted from the kidneys in the urine.

In order to test the pathological effect of preservatives on man and animals we have made several experiments. We have under observation several parties who have been continuously using condiments prepared with these preservatives,

and they appear to be in perfect health and exceptionally free from any complications or diseases of the alimentary tract. The writer took 15 grs. of each of these acids daily for one month without experiencing any ill effects.

On May 14, 1904, we began a series of experiments, in order to determine the effect of salicylic acid and benzoate of sodium, on animals. We decided to feed them a stated amount every day, and after a certain time to have them killed and examined to determine the pathological effects if any could be found. Our first series was three guinea-pigs, which we fed five milligrams of salicylic acid, which was administered in a quantity of cereal. The first few days we gave them seven and a half milligrams but this amount was too large, they did not eat the food readily, so we were compelled to cut down the amount. The only food given these animals outside of the prescribed diet was green grass, which was fed to them liberally. Comparing the weight of a guinea-pig with that of the average man, which is as 1 to 100, or 1 to 150, the same proportion of salicylic acid for a man would be from  $7\frac{1}{2}$  to 10 grains. This would be equal to a proportion of 1 to 1,000 in 16 to 24 ounces of solid food, which would be a fair meal. This amount of preservative is far in excess of that which would ordinarily be consumed by anyone continuously, and is therefore a severe test of the pathological effect, if any, on the delicate tissue cells, glands, and mucous membranes of the internal organs.

During the feeding term, the weights were taken every other day, and careful note was made of the general physical condition, activity, and the appetite. We also had controls to govern our conclusions, also for comparison when making pathological examinations of the internal organs. All of the animals gained in weight, but after fifteen days, for some unaccountable reason, all including the controls lost slightly, and did not regain the previous weight for several days. If we had had no controls, this would have given an unfavorable impression, but since the controls lost fully as much, the unfavorable symptom cannot be charged against the preservative.

Dr. W. H. Ingram, professor of pathology in the West Penn Medical College, Pittsburg, Pa., made the pathological and histological analyses. Quoting his words he says: "All these animals are well nourished and active—they were all killed at the same time. The abdominal cavity: stomach, intestines, liver, gall-bladder, pancreas, spleen, kidneys, suprarenals, uterus, bladder, mesentery and glands, were all normal. Thoracic cavity: lungs, heart, etc., were normal. Conclusion: The conclusion to be drawn from these sections after careful comparisons would be, that all three animals were in a healthy condition, and that whatever diets may have been admin-

istered, they had no effect on the various organs, so far as any structural alterations were concerned. I could not detect any evidence, either of an inflammatory, degenerative, necrotic or hyperlastic process." The animals of this series were fed on five milligrams of preservative from May 14 to June 15, in the presence of several persons.

The second series was five guinea-pigs, which had been fed the same amount of preservative for 63 days, three of them were given salicylic acid, and two benzoate of sodium. No deleterious effect was noticed during the feeding term. These were also submitted to Dr. Ingram, and we quote his results. He says, "These animals were all killed at the same time, and 'posted' while still warm, in manner similar to those of series 1. All organs are normal, none of these organs gave any indication either macroscopically or microscopically, of any disease processes. As I do not know the history of any of these animals, previous to being sent to the laboratory, the only conclusion I can arrive at would be that whatever conditions they had been subjected to, they had not produced any organic changes."

Other series have followed those and the results have been favorable.

In conclusion let me say that preservatives such as salicylic acid and sodium benzoate, are necessary in certain food products, and that it is dangerous to send these foods out unless they are protected against pathogenic molds and bacteria. Experiments on men and animals seem to warrant the assumption that those preservatives are not injurious, in the amounts employed in such food products.

With the object of solving the complicated problems relating to saccharine, the preservative question has been carefully studied and ascertained as far as possible, their necessity in food products, and the effect of micro-organisms by observation and by administering a certain amount to human beings and animals.

In connection with the matter of imperfect tin plate I will say this: that if goods are contaminated by the air through perforations, and those perforations are large enough to let out the gas as fast as it is generated, the can will not swell and the ptomaine will be in the can, so that a good tin plate is absolutely necessary to protect the goods, if the goods become contaminated.

MR. EMERY: How do you describe good tin plate?

MR. DUCKWALL: A tin plate that would show by the microscope that it was entirely covered—that is, the steel sheet would be entirely covered by microscopic examination. You can take a 16-millimeter objective and examine it with that, and it will give you a magnifica-

tion of from 60 to 200 diameters, according to the eye-piece you use, and that will show clearly if the plate is covered entirely with tin. If it is not covered, you will find little dark places. Some of you may have read of the work I have been doing in the laboratory in getting many photo-micrographs of imperfect tin plate, and we have been urging the canners all through to demand of the tin plate manufacturers a better tin plate than they have been using in the past, for the tin plate manufacturers stand ready to furnish it to them if they will only pay the price. It is only a question of dollars and cents. And that has been the line of our work, to educate them up to that standard and also to urge cleanliness in their products.

MR. MCPHERSON: Will you state that again, that evolution that leads up to ptomaine poisoning?

MR. DUCKWALL: Where the plate is too light, it is liable to rust from the outside and the tin plate is apt to be eaten off on the inside, exposing the steel sheet, and perforations are liable to follow. If the perforations are large enough the gases generated in the putrefactive process will pass off and there will not be any swelling of the can, but ptomaine poisoning is very liable to form in the can.

MR. MCPHERSON: What is ptomaine poisoning?

MR. DUCKWALL: A ptomaine poisoning is a body which is secreted by bacteria in cleavage processes, and there are three forms of bacteria most common as putrefactive organisms.

MR. SHERWOOD: I am requested to ask you some questions—that is, to state the proper process of soldering and so forth.

MR. DUCKWALL: The canners use for soldering a substance which is called a flux. There is enough zinc put in to satisfy the acid and the solution is then drawn off and used as a flux, usually diluted two or three times. The flux is never allowed to get inside the can. It is put around the crease of the can with pencil brushes to make a smooth job.

MR. JONES: We have in Illinois plants for making condensed milk and we find when it is canned under a certain process the milk coagulates. Did you ever have any trouble of that kind with your canners?

MR. DUCKWALL: It could do that, providing the soldering process would get on the inside.

CHAIRMAN JONES: How do you remedy that?

MR. DUCKWALL: We put it on with pencil brushes in such a way that it cannot get inside the can. I would think myself that in soldering such a thing as condensed milk with rosin it would do away with the acid entirely. That is possible to be done.

CHAIRMAN JONES: If there is nothing further under this head we will next listen to a discussion on the use of coloring matter and preservatives in meats, by Mr. W. D. Biglow, Chief of Food Laboratory, United States Bureau of Chemistry.

#### ADDRESS OF MR. N. D. BIGELOW

LADIES AND GENTLEMEN:

I had expected to follow an address by Dr. Manns to-day and had supposed that he would outline in a general way the discussion of the subject of meat products. I shall ask your permission, however, to make my remarks somewhat broader than that, as I have lately had some work which I have reported to the Association of Official Agricultural Chemists, which it has been suggested would also be of interest here.

Regarding the meat products themselves, there is, as you all know, a prevalent impression among a great many people that preservatives are added, in a large way, to fresh meat. I may say we have never been able to confirm that impression. Of course we know that commercial preservatives are sold for the purpose of being added to fresh meat. Their only use, so far as we have any authentic testimony, is in a very small way by butchers who have no cold storage facilities and who desire to keep their meat for a long time on the block. If you go into a market and see a nice platter of minced meat, fresh meat, with a nice color, that is standing there day after day, you can be very sure that it is highly charged with a chemical preservative, because it could not keep in any other way. Preservatives are used to a greater or less extent, in fact quite generally, with sausage that is not cured or smoked. That is generally admitted. It must be used if such sausages are to be kept out of cold storage, as they are kept in the markets in the summer, hanging up over the stalls. The smoked sausage is also frequently preserved, although it is apparently not necessary, as we are importing into the country no considerable quantities of sausage which contains any chemical preservative, although until our foreign food law that is in force now was enforced, these sausages quite generally contained a certain amount of boric acid.

I said that I would like to extend my remarks to some subjects beyond the meat products. Early last summer Mr. G. F. Mason, who addressed you this morning, called my attention to the fact that the amount of benzoic acid in cranberries was considerably larger than was ordinarily believed to be true. The amount which he thought to be present did not seem at all probable to me at the time, and I could not get over the impression that there must be some mistake somewhere. He knew nothing about the authenticity of his samples except that they were commercial samples on the market. Following my meeting with him last sum-

mer, I took occasion to obtain first two samples of cranberries from the Horticultural building, one of which was grown in Virginia and the other in Wisconsin. These berries had been kept in cold storage during the entire winter and until some time in July. The samples were in good condition and I found that they did contain a sufficient amount of benzoic acid so that if they had been made into cranberry sauce the food chemists would necessarily have reported benzoic acid present. I also obtained through the regular correspondents of the Department of Agriculture, at the request of the pomologist of the department, samples of cranberries from New Jersey, Massachusetts and Wisconsin, and in discussing the matter with Mr. Mason a day or so later, it seems that my result really confirmed his in practically every respect, although in some cases he obtained more benzoic acid apparently than I did. I would not be surprised though at the amount which he found, considering the amount I found, and I would not be surprised if it would be exceeded to some extent. I only mention this because it is always of interest whenever a thing so unusual as this occurs, to have it confirmed, and confirmed as soon as possible. Working as we have, entirely independently, each without the knowledge that the other was taking it up this summer, with samples that were obtained from distinct sources through different channels, seems to settle the matter without any doubt whatever that cranberries contain normally, and I think we may say universally, a large amount of benzoic acid, amounting in my results from one part to five thousand to one part to four thousand by weight.

Some eight or ten years ago, when I first began to come in contact with canning establishments and met the superintendents and managers of these establishments, my attention was frequently called to reports from food laboratories of the sense of preservatives and other substances in the goods, while the manufacturers were positive, according to their statement, that none had been added. I was also impressed by the fact that in other instances they said, "Yes, that is true; we do add a preservative," and I asked myself the question repeatedly, Why is it, with the same preservative, one that is as easily detected in one case as another, why is it that they admit its presence in one case and deny it in the other, if they were speaking truthfully, and I had every reason to suppose they were. They on a number of occasions suggested the probability that these preservatives either occurred naturally in the fruits and vegetables or were formed in the heat of the canning operation, in the process retort. I remember that both suggestions were made very frequently, and have been made with increasing frequency from that time to this. At that time I was inclined to dismiss them both as improbable, although

some time before this, in 1890, attention was called to the fact that salicylic acid, or rather I may say, a substance having the same reaction as salicylic acid, occurred in wine. Attention was called to the fact by a German, Weber, that not more than a couple of ounces of wine should be taken in testing for salicylic acid, because in taking a much larger quantity a test resembling salicylic acid would be obtained. The matter was dropped and not taken up again until 1900, when the Brazilian custom house, in using about six ounces of sample, reported salicylic acid present in certain wines; if I remember right they were Portuguese. The matter was taken up in France in 1901, the work was followed in Germany, and in the United States the work was extended to a wide range of fruits and vegetables and it was found to our surprise that salicylic acid did exist to a limited extent in a great number of fruits, but in no case to such an extent that the analyst could by any possibility obtain the salicylic acid reaction when working with such an amount as he would work with. In fact, he would have to take a couple of pounds or more, usually, for his test, whereas he usually takes less than two ounces to obtain the reaction. The other problem was still unsettled, and this summer it seemed to be of interest to take up the question of the influence of the operations of canning and the amount of preservatives in foods. With that in view, we secured samples of raspberries, blackberries, string beans, wax beans, the ordinary navy beans, which were boiled and canned as in the ordinary packed tins, and roast beef, which we canned in the usual way. All of these were subjected to ordinary canning operations. In place of the steam retort we used an autoclave, which gave the same conditions. The only departure being that in the case of the raspberries and blackberries we processed them at a considerably higher temperature, that is about 250 degrees Fahrenheit. Of course that was necessary. The time of processing varied from 25 to 40 minutes with the raspberries and blackberries. In the case of the other things I mentioned, with the exception of the meat, we processed them for 55 minutes to one hour at 250 degrees Fahrenheit; in the case of the meat we processed for two hours. All of this time you understand was in addition to the preliminary heating for driving out the air before closing the vent. The processing of course was with a closed vent. In this we followed the factory methods as closely as possible. Samples of all these articles were canned without any addition whatever, and in various cases with varying known amounts of formaldehyde, salicylic acid, benzoic acid and saccharine, the preservatives ordinarily employed, and saccharine because of its preservative qualities, notwithstanding the fact it is usually used as a sweetening product rather than as a preserva-

tive. I may say that in no case whatever did we secure any reaction for any of these substances in cans to whose contents no preservative had been added. Even to put the matter to the severest possible test we used in many cases a very much larger quantity of material, a very much larger sample than is ordinarily used, always five or six times the amount we would use in testing food in the food laboratory. Sometimes we used a sample as large as a couple of pounds. I may say that there was no reaction whatever. It is true in some cases we had a slight color, which might have misled a person who was following the operation for the first time, and whose information it was obtained exclusively from books. There was no color whatever which could have misled a chemist experienced in the examination of foods and testing for preservatives.

One feature of the experiment which was of considerable interest was the fact that in the case of the formaldehyde the greater part of the formaldehyde was entirely destroyed. Now when I say destroyed I use the term rather loosely. I do not know what happened to it. It may have combined with the proteids; some other chemical change may have taken place; I merely mean that no test for formaldehyde or any other aldehyde could be obtained whatever, except when formaldehyde was added to the goods before canning to a very large extent. When we added one part in seven thousand or a less amount, before canning, no test could be secured whatever in the canned product. When we added more than that we got a slight reaction in cases where we added but slightly more, and the reaction became somewhat stronger as the amount increased. For instance, when we added one part of formaldehyde to five thousand of the food before canning, in the canned product we had a reaction equivalent to about one part in fifty thousand, showing how completely the formaldehyde was destroyed or changed, so that we could not get the reaction.

With regard to the other preservatives our work is still unfinished. The articles are still in the cans. We have not had time to complete our work, but from what we have done with all the preservatives, from the few cans we have examined, I may say we have no indication as yet that any of the other preservatives are destroyed by the heat of the process retort, but on that point I wish to reserve report for the present, as we have still a hundred cans or more to examine.

With regard to all of the other points I mentioned, the work has been amply performed, not only by Mr. Dubois, who has spent the entire summer at the work, but also by myself. I thank you.

MR. MCPHERSON: May I ask Dr. Biglow a question? In some tests that I had made recently, along the lines that you suggest, they

discovered that there was salicylic acid in the goods, but the manufacturers declared that they did not put any in there, but that it had been heated to 240 or 250 degrees, and the saccharine or sugar changed to salicylic acid. Is that true?

MR. BIGLOW: I may say in regard to that, if that is possible, that is a new reaction in chemistry that has never been known. It is not in any of our reference books, and it would seem at first to be impossible, and from the work which I have just cited, which has occupied the entire summer and to which we have given our best thought and best work, it would seem to be entirely untrue, and you could not get the slightest test for any of those things. There is a possibility, of course, that the manufacturer might be mistaken in such a point, but it is not probable. Some time ago, one day last summer, a party of us—I think there were three in the party—were going through the agricultural building and we passed one stand and we mentioned the fact that the goods must contain salicylic acid, thinking the lady in charge would not know what it meant, but the lady at the stand did understand it and immediately took it up and told us that this article was made by her husband and that she saw it made and there was no salicylic acid in it. We took a bottle of the product and examined it, and as has been our experience before, we found it almost saturated with salicylic acid and later this gentleman who made the product was told about it. He was very much disturbed at first and then he brought out a half pint bottle and said it was the formula, but this formula had never been put in the half pint bottles. He asked us to examine a half pint bottle, which, of course, we did, and we did not find any salicylic acid there. Since that time, about six weeks ago, I have been hunting for half pint bottles of that firm's goods and have not been able to find any except in stands that are very close to the Government building, where we have a working laboratory.

PROF. LEACH: I would like to ask Dr. Bigelow what the condition of the canned goods was in which he found the formaldehyde, especially the canned vegetables. My experience has been that formaldehyde has been a most detrimental substance to use with canned vegetables—that is, it actually spoils the vegetables rather than improves them or causes them to appear better, and I have been unable to find formaldehyde in any vegetable product. I would like to ask Dr. Bigelow if he noted any change in the condition of the vegetable by reason of the presence of the formaldehyde?

MR. BIGLOW: I may say I neglected entirely to notice the state of the goods except the string beans and the peas. The other cans were opened

by the assistant there, who was not asked to notice the contents, and who opened them quickly and did not think of that point. With regard to the string beans and wax beans I may say the appearance seemed to be considerably inferior to those that were canned without the preservative, or with the other preservative. The shell seemed to be rather hard and tough, relatively. I judged from that that possibly the formaldehyde might have combined their proteids, as we know it does in milk, and given them a much tougher and much less attractive appearance.

MR. MUELLER: Isn't it possible formaldehyde may form during the sterilization process?

MR. BIGLOW: I will say that when we add formaldehyde to milk or cream it quickly disappears. The dairymen do make a practice of using formaldehyde for the purpose of preserving it. Now if it is not tested in two or three hours it will never be found, because it combines with the proteid and can no longer be detected. All the food chemists present will confirm that, because it is an experience we meet with frequently. And so in an article containing cream we not only have that fact, that the formaldehyde will combine with proteid, but the combined fact which we have demonstrated this summer, that it will disappear altogether.

I might say also, one point I neglected to mention, that we did make an attempt to find out what became of the formaldehyde, what it had changed to, and so forth. We haven't given it up altogether yet, but I can say that in cans which contained nothing but water and formaldehyde the formaldehyde did not disappear. It was not changed. It decreased a little, but not much. This indicates that there has not been a chemical change caused by heat alone, but that it has been destroyed with the assistance of the heat combined with the organic matter present, or more probably has combined with some organic matter in the food, probably on account of the heat, although I must say we cannot attribute it to the heat alone. I know very well in chemical processes generally that heat is often resorted to to promote an action which would take place more slowly in the cold. I have noted frequently that when formaldehyde was added to meat it acts just as it does in milk; it disappears somewhat slowly, but it is possible it might when added to the other foods. I have not attempted to look into that matter this summer, but I merely studied the action in the process retort.

PROF. SHEPARD: I wanted to ask you, Doctor, if you had made any experiments in heating formaldehyde, a solution of formaldehyde exposed to the air? The reason I ask the question

is that we have been doing a little work with formaldehyde, not in relation to the preservation of food, but in relation to its strength for use as a fungicide in killing smut on wheat, and we found a weak solution would concentrate. This was contrary to what I expected. I was wondering if it could be possible, where it is heated in canned goods and in this processing, whether the formaldehyde would not change to peri-formaldehyde, which does not react the ordinary test, and so would pass on and escape the ordinary methods of detection.

MR. BIGLOW: We have looked into the matter of heating formaldehyde in the open air. The question as to whether it would form in the can is answered by a trial where we had water and formaldehyde alone in the can, sealed, subjected to the same conditions the other products were. It was subjected to the same temperature exactly in the autoclave.

CHAIRMAN JONES: The next in order for discussion is Mr. W. D. Richardson. Mr. Richardson has had a vast experience in this line of work, being connected with one of the largest packing houses of this country, Swift & Company of Chicago.

#### ADDRESS OF MR. W. D. RICHARDSON.

I wish to thank the congress very cordially for the invitation to address you to-day on this subject, as it is one which of course appeals to me very strongly. I was a little disappointed at the few remarks which Mr. Biglow felt called upon to make with reference to the meat industry, inasmuch as I expected a rather longer discussion from one who has done such extended and interesting work along these lines. From the paucity of his remarks I might almost draw the conclusion that the meat trade is in a satisfactory condition.

I may say that in regard to food legislation I am strongly in favor of such legislation provided only that it is fair in its scope and uniform in its action and in its enforcement. The firm which I represent has the same views. We would prefer that this legislation be formulated by reasonable scientific men, such men as are present to-day engaged in these lines of work. I do not know myself whether these ends would be best attained by means of national laws or by means of state laws, but whatever course is adopted, I can only urge that the execution of those laws be uniform, that they be made to apply to every one engaged in the meat trade, and that in the case of state laws they be not used as a means of defense for a local manufacturer and as a means of offense against interstate firms. We are in favor of the absolute prohibition of the use of any color or antiseptic which can be shown by scientific methods to be injurious to the human system. We are not in favor of indiscrimi-

nate legislation against all classes of preservatives, simply because they are antiseptic in their action and which are harmless as a matter of fact. That is my general position on the question of legislation.

To be a little more specific in regard to the color question, I should say that the use of colors in food products arose in the first place from a public demand for colors, and in this respect the public is the greatest offender. I do not believe that any reputable manufacturer desires to use colors in his food products. On the mere ground of expense alone he would not desire to. But where the public desires and demands and buys goods which are highly colored (and that demand is very strikingly shown in the case of butter and in the case of some sausages which are absolutely not salable if uncolored), the manufacturer can do nothing but fall in line with the public demand. If one manufacturer should do otherwise he would be outsold in the open market; but if you gentlemen enact legislation prohibiting these colors and make such legislation effective against all persons engaged in the meat trade and other trades, we shall welcome the legislation.

I think I have covered to a certain extent the question of antiseptics in my first statement. The meat trade on a large scale is peculiar. Meat is peculiarly liable to decomposition. The protein molecule under the action of bacteria, goes to pieces with the utmost facility. For that reason the methods of preservation, as applied to meat products, must be more painstaking, more comprehensive, more exacting than in the case of many other food products. With increasing knowledge of bacterial action we are enabled to combat the influences of micro-organisms to a very large extent. With the education of the public in regard to these influences, the public can take hold of the meat products where we leave off, where they pass beyond our control, and continue the preservation by the best means, which is refrigeration. The best means we have for the preservation of meat at present is refrigeration, without any question, good refrigeration; it is the thing we rely upon most for delivering our products to the consumer in a pure and wholesome condition. I should say that next to good refrigeration the most important means which we have is salt as a preserving agent, but I would call your attention to the fact that neither the one or the other of these agencies will prevent or inhibit the action of bacteria for a great length of time. If decomposition has already started they will not stop it. In the first stages of decomposition they will delay it, and the more effective the refrigeration and the earlier the salt is applied to the meat, the more efficient those agencies will be.

Now I want to call your attention to the only excuse, as I see it, for the use of antiseptics in

meat products, and before I state the exact reasons for the use of antiseptics in any case, I want to remind you of the cases of meat poisoning which sometimes occur. In cases of meat poisoning the indications are usually these: That a piece of meat is bought,—it looks wholesome, has no unusual odor, is of good flavor; it may be partaken of by a family, possibly, or by a party, and very soon thereafter there are sudden and unusual symptoms. dizziness, nausea, coldness at the extremities, cold sweat, etc., and these symptoms are frequently followed by extreme illness and in exceptional cases, death. The cause of meat poisoning may be the presence in the meat of bacterial poisons produced through an unusual decomposition of the protein molecules by certain species of bacteria, or it may be due to the development in the human body itself of poisons by bacteria which have lived and developed in the meat. I stated before that refrigeration, or the use of salt, or both together, would not absolutely prohibit the growth of bacteria; but when we are curing meat under the influence of low refrigeration and high salt concentration we are at the limits of bacterial growth. A slight difference in condition will absolutely stop bacterial growth, or a slight difference in the other direction will cause it to proceed rapidly. For instance, suppose we have a vat of hams in cure; if we raise the temperature a very few degrees that meat will spoil and we will recognize that it is spoiled by the ordinary signs of decomposition. If we lower the temperature the chances are better that the meat will come out sound. If we increase the salt content, the chances are that the bacteria will find it difficult to live and reproduce. If we decrease the salt content, the bacteria will increase. And the bacteria which I am speaking of are found everywhere. It is not possible to keep them out absolutely, though by proper methods of sterilization and by extreme cleanliness we are able to keep the number down to the minimum. Now under conditions of low temperature or high salt concentration a third factor may become decisive as to whether bacteria will live at all or not, and in those cases the use of a minimum amount of harmless antiseptic is, to my personal notion, the lesser, I will say, of two evils, and preferable to running the risk of meat poisoning. Cases of meat poisoning are not common; they are rare, I will admit, but if it is possible by the use of a minimum quantity of preservative to do away with that danger, it appears to me only reasonable that that amount should be used.

And I want to say in regard to the question which came up this morning,—President Bailey, I think, asked the question,—how could an antiseptic be an antiseptic and not be poisonous at the same time, that I think that question should be answered in this way: The effect upon an or-

ganism of a soluble substance will be different in the case of an organism which lives within its food medium and in the case of an organism which ingests its food through the alimentary canal. In the first place, in the case of bacteria, we will say, the organism cannot escape the antiseptic; it is in contact with the antiseptic on all sides. In the other case the antiseptic is usually quickly eliminated by the body and therefore its effect is lost.

There is another point in the curing process that possibly I should mention, the use of saltpetre. It has come to me indirectly that there is a movement on foot to stop if possible the use of saltpetre as a curing agent, and I can only say that I am surprised that any scientific man would advocate such action. Saltpetre has been used from time immemorial in the curing of meats, in the quantities used at present, which produce no notable effects. It is very desirable that meat be cured with saltpetre for several reasons. If it be urged that saltpetre is a coloring matter, I can only say that it merely develops the color naturally present in the meat and adds no foreign color thereto. It raises the shade which the original meat possesses; and, to quote Dr. Wiley in his speech of yesterday, I believe he stated with reference to the importation of foods from foreign countries that foreign manufactures should put into their foods when shipping them to this country only those things which they would like to have in the foods themselves, or words to that effect, and with reference to saltpetre I think I can say that if I were curing a ham, or any of you were, saltpetre is the thing you would naturally use, and I don't think you would be afraid of it. In the country it is a usual ingredient in the cure of hams cured there for home consumption, just as much so as wood smoke; they are time-honored curing materials, both of them.

Now with regard to labeling: there is only one thing to be said about a label. It should state what the can contains and nothing else. But with regard to the question of the use of certain materials whose use is debatable, there seems to be a prevailing impression that that question should be left to the public to decide, and that firms using these substances should state on the label that such substance is used. In my opinion if you gentlemen favor such legislation as will make that compulsory, you are shifting your responsibility. The public cannot decide so well as you where the line should be drawn. The public has not the means of information at hand to decide whether it should consume this substance or that, and I believe nothing of that sort should appear on the label; and if it is desirable to leave any constituent out of a food product, it should be absolutely prohibited, and if you gentlemen decide that certain substances can be used

in certain proportions, allow them to be used, but in any case you should make the decision; don't shift it on the shoulders of the public.

I again wish to thank you for your invitation to address the congress.

MR. HOBBS: I would like to ask Mr. Richardson a question or two.

MR. RICHARDSON: I will be glad to answer any reasonable question.

MR. HOBBS: You made the statement that you were against the use of any color which is detrimental to public health?

MR. RICHARDSON: Yes.

MR. HOBBS: And then only under certain conditions. That is the inference that would naturally be drawn from your statement.

MR. RICHARDSON: My first statement was to that effect, but I said I could see no excuse for the use of colors at all, provided effective legislation be enacted against the use of colors, but I say, don't give one firm an advantage over another. I say no single firm can take the initiative.

MR. HOBBS: The point I want to bring out in this matter is that it seems most of the producers are trying to shift the responsibility in all these matters upon the shoulders of the commissioners and chemists. I do not know why we should bear the responsibility of determining which are pure or impure, which are detrimental to public health and which are not. It seems to me the men who are putting out the goods should be the prime investigators of those articles. You cannot tell me to-day, probably, the names or the composition of the coloring matters you are using in your lines of work, nor do you know except under trade sounds, and still you come to us and request of us before you will eliminate these colors, unless under absolute compulsion of law, that we shall determine the permissibility of all these colors, and place the responsibility upon our shoulders when they are trying to shirk it and shift it from their own. We have got a thousand and one of these colors that are changing all the time on the market.

MR. RICHARDSON: I don't want to be misrepresented. I am in favor of legislation which will absolutely prohibit the use of all colors in all food products. I wish the legislature would enact such legislation; and I think that was the statement I made. That is the impression I wished to convey, and that the legislation in regard to coloring matters be general, and that no firm be allowed to use a coloring matter. Now, I think that is a fair position for a manufacturer to take.

MR. McPHERSON: I believe I understand what the gentleman means, and that is, that he does not want to change these things and go on without colors unless everybody else will do it,

and he believes the commissioners are the ones to make these rulings, and they are, and I believe that shifting it on to the shoulders of the commissioners is the proper thing and in the respective states see that legislation is enacted along that line and the manufacturers will not kick so long as every one is treated alike.

MR. ANKENY: I wish to supplement that statement by saying that one or two large firms in the United States can back up three or four weak commissioners and do more good by their putting out an absolutely wholesome uncolored product, than we can do. Let one large firm like Swift & Company say "We will put out nothing but absolutely pure, uncolored goods," and you will find dozens of little firms in the country following them. Let one large firm, like Heinz & Company, who have done that, put out absolutely straight goods, and you will find others doing it. I say that we want the manufacturers to stand with us and they can help us, and let us not lay down the rules and say, "We will make you, who represent your millions, come up and do these things." I believe these are the men that can help us, and then we will have pure food.

MR. MCPHERSON: But we will have to stay with them.

MR. ANKENY: We have been with them, and they want us to stay with them and compel them to keep one another from cutting their own throats, and I believe the millions of people in the United States will stand up for moral things and honest things, and when these firms representing their millions stand up for these things then it is that we food commissioners can do some good.

CHAIRMAN JONES: I wish to say that that is what we are here for, to try and get together. The next in order on the program is an address, "The use of Saccharine Matter in Food Products," by Dr. Charles P. Caspari, Professor of Chemistry, St. Louis College of Pharmacy.

ADDRESS OF DR. CHARLES E. CASPARI.

#### THE USE OF SACCHARINE IN FOOD PRODUCTS.

During the last few years very much has been said and written about the use of saccharine in food products and a great deal of this literature has come to my notice, so that from various motives I feel constrained to add a contribution in defense of a substance which was discovered in the laboratory where I received my training as a chemist, especially as there seem to me to be so many arguments in favor of the use of saccharine.

I desire to have it distinctly understood at the outset that I am not an opponent of the movement which the United States government is mak-

ing toward the perfection of pure food laws in this country; on the contrary, I favor most heartily any legislation which makes for the highest standard of purity, whether it be in drugs, chemicals or foods.

Now, what are the conditions that must be satisfied before a food is pure? It seems to me that they are the absence of any substance that is deleterious to the human organism, the absence of all antiseptics and preservatives and the absence of all substances which would tend to deceive the consumer. It has been maintained by many that saccharine violates all three of these conditions and it is my object to endeavor to show that, on the contrary, saccharine satisfies them all, that is, to show that saccharine does not cause any deleterious effect on the human organism, that it is not an antiseptic nor a preservative in foods and that it is not added to foods for the purpose of practicing deception on the general public.

First, then, I shall discuss the question whether or not saccharine is injurious to the human organism. In trying to answer this question, I can only quote the opinions of prominent medical men in this country and Europe, and so far as I have been able to learn, they are unanimous in the opinion that saccharine is absolutely harmless. The following are a few of the most pronounced expressions of opinion in favor of the use of saccharine which I have been able to collect:

Prof. Stokvis, M. D., chairman of the Board of Health, in Holland, says as follows:

"Saccharine can never fully replace sugar. It leaves the body unchanged, consequently is not food; but sugar is really, also, not a food, because, out of the 400 or 500 grams of carbohydrates that the growing man needs daily, only 20 grams consist of sugar (in Holland and Germany about 9½)."

Dr. Goldstein, private teacher in the chemical department of the St. Petersburg (Russia) University:

"Saccharine is subjected to the continual attacks of sugar manufacturers because sugar and saccharine have a hard fight in the markets. In spite of this, the sugar manufacturers have succeeded in finding support amongst the representatives of science, but the much-abused saccharine will finally come off victorious. This has given rise to the alleged injurious properties of the uninjurious saccharine. Saccharine can only be used in small quantities for the preparation of food and drinks, because it is only when used in small quantities that the products obtain a pleasant taste. In these doses saccharine has absolutely no effect on the human organism, through which it passes completely unchanged in the form in which it enters. My opinion agrees completely with that of the Russian Society for the Protection of the Public Health, and I believe that saccharine is

quite uninjurious to the human organism, and, therefore, should be allowed to be freely used in all cases."

Dr. A. Stutzer—Deutsch-Amerik. Apotheker Zeitung, N. Y., 1885. No. 14:

(a) "Saccharine does not prevent digestion.

(b) "Saccharine mixed with food as a sweetener in the proportion of 1:1,000, does not show any action on the digestive powers.

(c) "Saccharine in large doses acted on the digestion of proteids only to make the process longer, but in no wise as a prevention. If time was not considered, the food was digested as perfectly with as without saccharine."

Prof. E. Salkowski, M. D., Virchow's Archiv fur patholog. Anatomie und Physiologie, und fur klinische Medizin, Vol. 105, p. 46, Berlin, 1886:

"As a conclusion from the experiments, one cannot help but decide that any injury to the health from the use of saccharine is not to be feared."

Dr. A. Mosso, Professor at Turin, Dr. J. Aducco, Dr. U. Mosso, of the University in Turin, Archivio per le Scienze Mediche, Vol. 9, No. 22, p. 415, 1885:

"Saccharine is harmless for man and beast. It goes exclusively into the urine, and is carried out of the body in just the condition in which it entered."

Thomas Stevenson, M. D., F. R. C. P., London (Instructor in Medical Jurisprudence and Chemistry at Guy's Hospital); L. C. Wooldridge, M. D., D. S. C., M. R. C. P., London (Assistant and Instructor of Physiology at Guy's Hospital); Lancet (958), London, 1888:

"About the harmlessness of saccharine, we are not in doubt. Careful continental investigators have proven this, and we have confirmed their conclusions."

P. Mercier, M. D., Paris, 1889:

"Saccharine, taken in large doses (several grammes per day) and during long periods, does not influence any of the bodily functions. The part that circulates passes completely into the urine."

Dr. Fr. Jessen, in Munich Archiv fur Hygiene, 1890:

"I have been unable to find any trace of injurious effect in the use of saccharine."

Dr. G. Vulpius, Professor at Heidelberg:

"Even daily doses of 5 grammes (75 grains—sweetening power of six pounds of sugar) have not the slightest disturbing influence on the digestion, or any other injurious effect. It is absorbed in extraordinarily short time, and does not reappear in the saliva or milk, but seems all to go unchanged into the urine, with which it is completely eliminated from the body in a short time."

Dr. E. Stadelmann, of the Medical Clinic of the Grand Ducal University, Heidelberg, 1889:

"Saccharine is absolutely harmless to the human

organism, even in big doses and if continued over long periods."

Letter from F. W. Pavy, M. D., London, to the Lancet:

"In a notice in your last number you say it will be difficult to come to any conclusion about the real position of saccharine, and you base this opinion on a report of a commission of French physicians, which has appeared very recently in different journals, and which speak unfavorably of saccharine. Since my name has been often mentioned in France in this connection, I beg of you to allow me to explain through your paper, that the opinion quoted is absolutely untrue. Last summer I received a visit from Dr. Worms, of Paris, and in the course of conversation, saccharine was mentioned, and I was asked whether I had noticed the bad effects of its use in diabetes. A short time after this interview, I received a copy of the "Bulletin de L'Academie de Medicine," containing a statement by Dr. Worms of the Academy, that he had learned from me that I, as well as he, had noticed that indigestion appeared on using saccharine amongst a number of my patients. The following quotation from the letter which I sent Dr. Worms at once, will show my position exactly:

"I am beyond measure astonished to find in this "Bulletin de L'Academie de Medicine" what you have given as an interview with me, during your visit in London, because it is diametrically opposed to what I actually told you, and I am utterly unable to know how such an error took place.

"I said, in my experience, that stomach trouble was never caused by the use of saccharine, and that I use and prescribe it often. I stated that I, once in a while, met people who complained about the unpleasant after-taste and, now and then, about the sweet taste remaining so long in the mouth, but, besides these facts, I have never remarked that saccharine had caused any complaint. As there are so many who can claim that saccharine has done a great deal of good, I think it might be well if you would recognize your error, and correct it."

"In answer to this letter, Dr. Worms wrote me that the misunderstanding was caused by his believing the sweet taste that formed in the mouth was due to the stomach trouble, and he would correct his statement which he made before the Academie of Medicine. But the evil effect of a public report is rarely to be lost by a simple correction."

Dr. R. O. Neumann, at the suggestion of Dr. K. B. Lehmann, of Wuerzburg, undertook to study the effect of saccharine on the human system, and he expressed the conclusions derived from his experiments as follows:

1. Saccharine is an excessively sweet condiment which in large quantities produces a pe-

culiar irritation of the nerves presiding over the sense of taste. The sensation produced cannot be regarded as sweetness. It is only in very small quantities that the exact sensation of sweetness can be produced by it.

2. Such small quantities produce no influence subjectively upon the general condition, nor objectively upon the metamorphosis of albumen. The result in the author's experiments applied to quantities as high as 3.5 gms. of pure saccharine per day, which would correspond to the sweetness of 1,575 gms. of sugar.

3. The quantities of saccharine mentioned did not increase the quantity of urine nor produce diarrhœa.

4. Neither the urea, the quantity of fæces nor the nitrogen in the fæces were greater when saccharine was taken than before and after its use.

5. The metamorphosis of the food was the same when saccharine was taken as when it was not.

6. Bad symptoms, such as headache, malaise, repugnance to food and vomiting were absent.

7. Saccharine is therefore an absolutely harmless condiment, which in the quantities in which it is likely to be used can in no way injure health.

Again it has been shown that saccharine passes through the human system unchanged, that it does not inhibit digestion and that it appears as such in the urine. In view of these facts, it can hardly be said that saccharine is injurious.

It is a well-known fact that persons suffering from diabetes are restrained from eating sugar because in the stomach this sugar is hydrolyzed, forming grape sugar, which is especially injurious in diabetes. Now, in these cases it has been found that saccharine can be taken as a sweetener of food without the faintest disturbance to the well-being of the patient. Further, persons suffering from obesity are denied all sugar on account of the fat-forming powers of all carbohydrates. Now, in these cases, saccharine has been used as a sweetener with the most admirable results.

It has been urged against the use of saccharine that its use in Germany and France has been restricted and even prohibited by the government, and it has been unjustifiably assumed that the cause for this action was the injuriousness of saccharine to the human system, while we must, as a matter of fact, look to economic reasons to explain this state of affairs. It is well known that both France and Germany derive large revenues from the sale of sugar and it is because these revenues fell off when the use of saccharine increased, that the German government prohibited its general use, while the French government prohibited its importation; and, further, since most of the saccharine used in France had to be imported from Germany, and since France and Germany are such enemies, it is not difficult to understand why

France should prohibit the *importation*, and not the use of saccharine.

Perhaps the strongest argument in favor of the use of saccharine is the following: In the children's clinic, at Breslau University, the question of sweetening milk for the small patients with sugar or saccharine was thoroughly investigated, and the conclusion reached was that the milk sweetened with saccharine had the greater real nutritive value, and for the following very logical reasons:

The sugar possessing nutritive properties, the hunger of the little child, being nourished on milk sweetened with sugar, was satisfied by the food of the sugar, as well as of the milk, and therefore was allayed before the child had taken the amount of milk the physician desired it to have; whereas, when the milk was sweetened with saccharine, the desired sweetness was present, but the food value was not otherwise enhanced. The patient in consequence would take *all* the necessary food in the form of the more valuable milk, instead of partly milk, and partly questionable nutrition in the form of sugar. Dr. Keller, resident physician, sums up his observations as follows: "If in feeding babies, sweetening of the food is desired, the artificial sweetener, saccharine, is preferable to sugar." Saccharine can certainly not be very injurious if it does not affect the delicate stomachs of infants.

As a case of a food sweetened by saccharine, consider canned corn. Canned corn is frequently sweetened by saccharine and I have learned from several of the most prominent canners in this country that the amount of saccharine in a can of corn is about  $\frac{4}{25}$  of a grain and when we remember that a can of corn is eaten by not less than four people, it is evident that each person receives about  $\frac{4}{100}$  of a grain of saccharine, surely not an excessively large amount. The same quantity of the virulent poison, strychnine, is frequently given as a dose and certainly no sane person would ever think saccharine is as injurious as strychnine. Evidence of this nature could be produced almost indefinitely, but I think enough has been adduced to show that saccharine, at least in such quantities as it would be taken in food stuffs, is not injurious to the human organism.

Another fact which speaks for the harmlessness of saccharine is that no bad effects are noticed among the employes of factories where it is manufactured, although these laborers are subjected to its influence almost continuously as the atmosphere in such factories is charged with saccharine in a fine state of division and some of it gets into the system with every breath that is drawn. These arguments certainly answer those who claim that saccharine retards the digestion of starch or albuminous matter in the digestive organs, that it

favors dyspepsia and that it exerts an injurious influence on nutrition.

I cannot pass over this phase of the question without calling attention to the unscientific way of quoting authorities. In a bulletin published by one of the state experiment stations, a quotation is given as follows:

"Its solution (saccharine) has antiseptic properties and in Plugge's numerous experiments it checked the action of ptyalin, pepsin, trypsin and other allied ferments. Sawitzki, indeed, alleges that it depresses proteid metabolism. In Bruylant's trials, it failed to check artificial digestion, probably on account of the acidity of the solution, but as little as one per cent is enough to distinctly lessen the action of the pancreatic solution." In looking up this quotation, I find that one important sentence was suppressed, a sentence which follows immediately on the quotation as I have just given it, and I give you now that portion which was suppressed: "The general innocuousness of saccharine is in accord with our own experience, asserted by Salkowski, Bruylant, Deschfeld, Levinstein and by other clinicians." The author of the above quotation has said in another place, "It is true that Plugge has found that *outside of the body* saccharine retards salivary and pancreatic digestion, and Sawitzky believes that he has experimentally demonstrated that saccharine inhibits nitrogenous metamorphosis by a direct action on proteid metabolism. Nevertheless, saccharine may be used for a great length of time without apparent effects."

I shall endeavor to show next that saccharine is not a preservative nor an antiseptic when used in foods. With your permission, I shall quote the opinions of some leading authorities on this point.

Mercier concluded as the result of his experiments that it had no injurious effect on the peptonizing of albumen with pepsin, nor on the conversion of starch by diastase.

Mosso and Duco found that if a pepsin fluid contained as much as 0.16 to 0.932 per cent of saccharine, the peptonization of coagulated albumen would be unretarded; that neither an acid nor a neutral solution of saccharine of 0.16 to 0.23 per cent would diminish the amylolytic effect of the diastase of the saliva, and that a 0.0064 per cent solution would not influence the activity of the pancreatic secretion.

In this connection the relation of saccharine to sugar as to sweetness (1:550) must not be forgotten, nor the very minute relation which an ordinary dose of saccharine bears to the contents of the stomach. Constantin Paul found saccharine a valuable antiseptic for the digestive organs and not injurious. He also found that as much as 3 grains would cause no disturbance of the nutritive process.

Stutzer concluded that when used as a sweet-

ener in a solution of 1:1,000, saccharine had no retarding effect upon digestion, but that in very large quantities a retarding effect was noticeable. In the proportion of 0.04 to 0.10 gram to 100 grams of fluid, and with the addition of sugar, saccharine accelerated the solution of malt.

Kalkowski's findings were as follows:

1. It neutralized the effect of saliva on starch or retarded it when used in acid solution, but there was no effect of this nature when it was neutralized with bicarbonate of soda.

2. It did not prevent the peptonizing of albumen by gastric juice.

3. In neutral solution it did not prevent the conversion of starch into sugar by the pancreatic secretion.

4. Trypsin dissolved fibrin at 40° C., whether saccharine was used or not.

5. Even in saturated solution it did not prevent the digestion of albumen.

Stevenson found it harmless even in large quantities, that it did not prevent digestion in ordinary doses, and that its continuous use in ordinary quantities was not harmful in any way that he could discover.

Gans reported that saccharine and its sodium salt in suitable doses did not affect digestion in the stomach or intestine, and prevented decomposition of the contents of the intestine.

Jessen states that it did not prevent the conversion of starch into sugar by ptyalin and retarded the peptonization of albumen only to the same extent as sugar, alcohol and spices. It did not prevent the digestion of milk.

Jaworski found that less than 25 grams daily had no effect on the digestive organs, more than 25 grams caused a mild diarrhoea. Even 100 grams did not produce severe symptoms and the symptoms disappeared when the large doses were stopped. The purgative effect was comparable to that of common salt.

Paschkis after many experiments concluded that when used as a spice it did not affect digestion or nutrition, and that it was quickly eliminated from the body in an unchanged condition.

Lehmann, the distinguished authority upon foods at the University of Wurzburg, thought it wrong to prohibit its use if it were harmless. He found that 0.2 gram, the equivalent of 60 grams of sugar, could be taken daily, and with less harm or discomfort than any of the spices or narcotics. From a hygienic point of view he could see no objection to it.

The Sanitary Board of Holland agreed (1888) unanimously that it was harmless in doses as large as 2 to 4 grams daily, and that from a sanitary point of view it did not seem necessary to restrict its use by any legal measures.

The Imperial Royal Sanitary Council of Austro-Hungary in its report of July 14, 1888, approved of it, as harmless and as a useful sweetener, con-

firming this opinion by a second favorable report Nov. 15, 1889.

The foregoing testimony, to which more might be added from scientists in Germany, Austro-Hungary, Italy, Switzerland, Belgium, Netherlands, England, France and the United States, if it were necessary, can be substantiated and is the evidence of eminent scientific men as to the entire harmlessness of saccharine when used as it is intended to be used.

This evidence is not only abundant, but convincing, and shows conclusively that saccharine in the extremely small quantities in which it is used in foods is not an antiseptic nor a preservative. Only recently, I asked one of the chief officials of the U. S. Public Health and Marine Hospital Service his opinion relative to this question, and he unhesitatingly replied that while saccharine in large quantities might be considered a preservative, it certainly had no such properties when used in small quantities. In order for saccharine to be used as a preservative it would have to be used in such large quantities that the human stomach would rebel against it and would not retain it. If we are to consider saccharine as an antiseptic then we must also consider common salt, sugar and alcohol as antiseptics, because, like these three substances, saccharine has preservative properties when used in large quantities. Who would class common salt, sugar and alcohol among antiseptics? Yet in large quantities, all three of these substances are used as preservatives, and you need reflect only a moment to convince yourselves that this statement is true. Alcohol is used in almost every tincture and fluid extract as a preservative, and yet who would think of legislating against this use of alcohol? How much less reason is there then for legislating against harmless saccharine, which is used in only infinitesimally small quantities and not even then as a preservative? Saccharine should, therefore, be classed as a condiment, just as salt, sugar and spices are, and as such it certainly merits the same consideration that other condiments do. It was formerly claimed by the manufacturers of saccharine, following in the wake of its discovery, that it possessed antiseptic properties, but now that it has been refined to such an extent that it is 550 times as sweet as sugar, whereas it was formerly only 300 times as sweet, and in the light of more recent investigation, these same manufacturers realize that their claim is entirely unfounded.

It still remains for me to show that in those instances where saccharine is added to foods, it is not added with a view to deceive the public nor to making it believe that it is receiving sugar.

Saccharine is not a food and so far as I know, food value has never been claimed for it. Sugar which is contained in food products happens to

have food value, though it is not added for the purpose of increasing the food value, but as a preservative or as a condiment. Although sugar is a food, it supplies only about 20 grams of the 400 to 500 grams of carbohydrates which are required daily by the average healthy adult male human being, while in many instances the average daily consumption of sugar is much less than 20 grams. What I want to emphasize is that sugar is added to foods not to increase the nutritive value of the food, not as a preservative, but as a condiment to make the food more palatable. It is certainly no deception then to use any other substance to render food more palatable, provided that this other substance is harmless and is not an antiseptic. Then why is it deception to use saccharine for rendering food more palatable? The object is to sweeten; what matter how this is accomplished, so long as no injury is done? In the extremely small quantities in which saccharine is used, it can be regarded only as a condiment, and as such should not be discriminated against. If users of saccharine are compelled to state on their labels that their products are sweetened with saccharine, it is an unwarranted discrimination against them, as such a statement is not demanded in the case of other condiments. To show why saccharine is used in preference to sugar, I shall quote from a letter received from one of the largest packers in the United States:

"It is necessary to sweeten canned corn somehow, because if it were to be processed without the addition of a little water, the extreme heat of processing—245 to 250 degrees for an hour—would scorch the contents of the can. The addition of water alone causes the canned corn to be flat in taste, so, to bring it up to the natural sweetness of corn, sugar used to be added to the water, in proportion of 100 parts water, sugar 12 parts. This solution, when it comes in contact with corn, forms a dangerous combination, and the result is an acid fermentation which develops during the spring and summer after the goods have been canned—and this form of spoilage not only causes great loss of money, but it happens that the cans do not bulge at the ends so one cannot pick out the bad cans until they have been opened. The result was that when a lot of corn was complained of as sour in this form, it had to be condemned, good and bad. Some seasons the loss has been as high as \$25,000 to a large packer. The use of saccharine in minute quantities in which packers of canned corn use it, has *absolutely done away with* this form of spoilage. A solution of water and saccharine equal to 15 lbs. of sugar and 100 lbs. of water would be all that any packer would ever use.'

You will note now that saccharine is used in place of sugar to prevent any fermentation which might be caused by sugar. The saccharine acts negatively! It simply replaces a substance which

is subject to fermentation and surely that cannot be called deception.

I think I have shown conclusively now that the addition of minute quantities of saccharine to foods in no way interferes with their purity, as saccharine has no harmful effect on the human system, it is not an antiseptic nor a preservative, nor is its use a deception on the public. If the use of saccharine is prohibited by law, the foods will be no purer and a growing industry in this country representing a large capital invested will be killed. We are accustomed to lament the superiority of the chemical industries of Germany over those of the United States and yet when an opportunity comes for the United States to forge ahead a little, the effort is killed by unjustifiable legislation. Absolutely nothing will be accomplished by legislating against saccharine.

Pure food laws are absolutely necessary in this country and no one could be more hearty in their support than I, but there is a possibility of drawing the lines too tight, thereby working hardship rather than public good. In a paper read before the American Pharmaceutical Association about two weeks ago in Kansas City, Dr. R. G. Eccles of Brooklyn showed from statistics that more people were dying from the use of food that contained no preservative than from that which was preserved, the unpreserved food becoming infested with ptomaines, which accomplished their deadly work in the human body.

I cite these instances not to advocate the universal use of preservatives, but simply to show that it is possible to go a step too far in our regard for the public good. In our endeavor to formulate pure food laws we must be on our guard against putting the cart of our eagerness before the horse of our common sense.

CHAIRMAN JONES: This is a very interesting question, and one that is now prominently before every state food commissioner. We have down for discussion Mr. John F. Queeny, of the Monsanto Chemical Works, St. Louis, who will next address us.

#### ADDRESS OF MR. JOHN F. QUEENY.

Mr. President and Gentlemen:

I am thankful for the opportunity and the honor of meeting and addressing such an influential body of men—men who have the public welfare at heart and whose aims are the highest; whose efforts are devoted to encourage and enforce legislation which shall protect the public against the dangers of adulterations and sophistication of the food they consume.

While this meeting is composed of the Association of State Dairy and Food Departments, and the invitation to take part in your Congress was addressed to me to the Monsanto Chemical Works, of which corporation I am president, yet my remarks will refer more particularly to drugs, and

although the term "drug" does not appear on your letter of invitation, drugs, in a sense, is co-extensive with the term "food" and it is difficult at times to say where one ends, and the other begins.

I believe that my experience in the drug business has been such as to enable me to speak intelligently on the subject from a practical standpoint, with twenty-five years' experience in the buyer's chair, the last ten years of which have been with Meyer Brothers Drug Co., of this city, with which I am now associated. As this house is undoubtedly the largest of its kind in the world, it is but natural that experiences in that position with a house which carries on such an extensive business, would be many and varied, and I now say to you in all earnestness, legislation is absolutely necessary for the public health and welfare—not only legislation to protect the people from sophisticated and unhealthy foods, but also from impure and adulterated drugs.

There is no doubt whatever that a large majority of the business houses of this country are honest, and are constantly striving—and successfully, too—for improvement in quality, but there are, unfortunately, those—the minority—for whom, it seems, there must be a law which will act as a club, the fear of which would force them to be correct in their dealings.

In speaking on the minority in the drug business and the necessity of legislation, I have in mind, when, as a boy on the pick-up wagon—city buyers we were called—in the early 70s, my first experience with adulteration.

I was then with a drug house who bought as their demands required Jamaica ginger root in two-barrel lots in New York. When it arrived, the proprietor would send for me and say, "John, shop around and pick up three barrels of white corn." I would, accordingly, buy the three barrels of white corn at the best price I could, and bring them into the store. Then, I would be instructed to take the three barrels of white corn with the two barrels of Jamaica ginger root to a certain local miller; he would do the rest, and it is not difficult to imagine what that was, even though it happened thirty years ago.

I shall never forget it and when, later on, I reached a position of authority, I made it my special business to see that goods of only the proper quality were handled.

I may be considered by some a crank on the subject of pure drugs, nevertheless, I feel and have always felt, that in so far as drugs are concerned, the quality can never be too good.

I will mention here, simply to illustrate, a few of the many instances of adulteration that came to my personal attention; for example, flour to the extent of 50 per cent in powdered elm bark; lump borax in thymol (you know the form of the crystals and the physical appearance of both

are about the same); Epsom salt in oxalic acid, and a very recent experience of oil of peppermint, from which all the menthol had been extracted. These simply illustrate what I term deliberate adulteration for personal gain.

I know where the manager and buyer of a jobbing drug house personally approached a manufacturing chemical house with the proposition to reduce the strength of staple articles, such as salol, bismuth and iodide salts, and supply this class of goods to them without labels—he, the drug jobber, would know what they were—rather what they were intended for.

I know of an instance where a camphor refiner was approached by another drug jobber with the proposition to make camphor for them which would contain 50 per cent paraffine. This party is, happily, no longer engaged in the drug business, yet I wish to say that both of these propositions were turned down cold, as manufacturers of this class of goods are honorable business men and would not give such propositions a moment's consideration.

I will also mention a letter which was received by a large drug milling establishment, asking for quotations on a quantity of different drugs, closing the inquiry with the following significant remarks, "It is quantity we want, not quality," and to cap the climax added, "the goods are wanted for a hospital."

The house that wrote that letter claims to do a jobbing drug business.

When, a few years since, I was chairman of the Committee on Adulterations of the National Wholesale Druggists' Association, I incorporated that fact in my report and added:

"While the practice of re-branding window-glass by marking up 'B' quality to 'A,' and boldly charging for the latter, is common in some houses, and should be placed on a par with the offense commonly before the police court—petit larceny—the men who wilfully and knowingly supply a hospital with impure, adulterated or inert drugs, should be placed on a par with the criminal who is convicted of the charge of murder in the first degree, and be treated accordingly. There should be no punishment too hard for anyone guilty of such an offense against humanity."

In the discussion which followed the reading of the report, Mr. Kline, of Smith, Kline & French Co., of Philadelphia, said:

"I think the report is exceedingly valuable to us, because it does point out adulterations which all of us recognize do exist, to a limited extent at least; and I hope very much that we shall encourage having brought to our attention matters which we believe wrong and which we all know exist. There is one item in the report which is so outrageous that it ought to be printed in our proceedings with red ink, so that if our members do not read anything else they will read

that, and that is where the chairman of the committee points out that a drug house received an order from some one who said that the house need not be particular about the quality of the drugs, because they were for a hospital. I am sure most of us could speak from personal experience as to having requests from unprincipled dealers, of which there are happily very few, making just such requests."

I have repeated the foregoing because it was an acknowledgment in open meeting and confirmed my statements of the existence of adulterations in the jobbing drug business.

Think of having a friend, relative or member of your own family in that hospital to undergo an operation or for other treatment, and the hospital staff depending for success on the effect of certain drugs or chemicals supplied by the house referred to. Is not the thought enough to make one turn cold with horror, that anyone should be so degraded as to trifle with drugs intended for use in a hospital?

These facts explain why I said—legislation is absolutely necessary for the public health and welfare.

The men who commit such acts and who conceive such miserable ideas are, as I said before, happily in the minority—nevertheless, they exist and will continue to exist, and it is up to you, to me, and all other honest men, to stamp them out, in any and every way possible, but in doing this, do not impose unnecessary hardships on the large majority of our merchants who are honest and honorable in their methods. In considering pure food legislation, you should also consider them, because the most moderate pure food and drug law necessarily imposes numerous burdens, which, however, they are willing to bear, but when you try to pass a bill or enforce a law which is not practical and which contains some narrow-minded ideas to make it obnoxious, you will not have their assistance; on the contrary, and for their own protection, they are forced to antagonize you. Without their assistance you cannot attain the end you are now seeking.

There is no question of your honesty of purpose, but not all of you have had the practical experience to understand or appreciate the uncalled for trouble, hardships and annoyance the jobbers and manufacturers would inevitably have suffered had either of the pure food bills which were before Congress last session become law.

I have reference only to the drug portion of it and its non-passage proves conclusively the truth of my arguments.

"You will find the large majority of manufacturers and jobbers willing to assist you in the passage of a national pure food bill, which will protect the public, but when you present a bill which is not practical or which contains unnecessary and obnoxious clauses, you will find

them lined up against you and opposed to its passage.

I believe the Hepburn-McCumber bill would surely have passed at the last session of Congress if some of the objectionable and impracticable features were eliminated, and these were pointed out to the committee.

The English pure food and drug law is an ideal one, in my opinion, and if it falls short in any of our requisites, these can be covered subsequently and the law strengthened by amendments, as the case demands.

Do not grasp at and hold fast to visionary elements not founded on fact and overlook the main issues.

An example is Saccharine. It is beyond my comprehension to understand why anyone should claim that this substance should be placed in the class of adulterants, when less than one-fourth of a grain is used to a pound of corn or similar food product, which is served to four to six people, or that the use of the article is a deception in the sense that deception is intended in connection with adulteration.

I feel that there could be some ground for opposition to its use if we produced all the sugar we consume, but, as I understand it, we produce less than half the quantity consumed in the United States. Surely the sugar trust has sufficient protection and are in a position to regulate conditions pertaining to sugar to suit themselves. Is it possible that they cannot bear to see any other product on the market, the use of which might to any extent, no matter how small, affect its interests? Are they the cause of all the unnecessary and uncalled-for agitation against the use of Saccharine?

Although I am interested in its manufacture, I would have preferred not to mention Saccharine at all, at this time, in view of the fact that Dr. Caspari was to read a scientific paper on the subject and felt sure his arguments, based on facts, would conclusively satisfy you that from any standpoint its use would not violate any of the fundamental principles of pure food legislation, yet I refer to it because it is one of the best examples I can think of to illustrate how the main objects of pure food and drug legislation are lost sight of, in chasing phantoms.

It occurs to me that it is time enough to condemn any article when tests and experiments demonstrate conclusively that it is harmful to the human system.

My suggestion is to make all the friends you can for the cause we are working for, work for a law that will be as moderate as possible, free from burdensome and unnecessary features—which only make trouble without benefits—but at the same time have it rigid enough to protect the public health and welfare.

I thank you, gentlemen, for your attention.

CHAIRMAN JONES: I understand that Mr. A. W. Farlinger, President of the National Association of Retail Grocers, is present, and if he is prepared we will be glad to hear from him.

MR. FARLINGER: Mr. President, and Gentlemen—The subject assigned me for discussion is that of a National Pure Food Bill. I have taken the liberty to amend it to a certain extent, and will ask your kind indulgence for a few minutes as to the passage of national pure food legislation from the standpoint of the retail distributor of pure food products, and I shall endeavor to be as brief as possible.

ADDRESS OF MR. A. W. FARLINGER.  
NATIONAL PURE FOOD LEGISLATION FROM  
THE STANDPOINT OF THE RETAIL  
DISTRIBUTOR OF FOOD PRODUCTS.

Mr. President and Gentlemen:

In my efforts to present to you the views and position of the National Retail Grocers' Association of the United States, upon pure food legislation, I shall endeavor to be as brief as possible in dealing with a subject of such vital importance to the future welfare and destination of this nation.

Mr. President, I firmly believe that the paramount question before the country to-day is that of "National Pure Food Legislation."

Legislation that affects every child from the first day he is permitted to gaze upon the azure beauties of this world, until the day is ushered into the possibilities of greater opportunity in the life beyond the grave.

Mr. President, we are dealing with a subject that affects each and every home, and each individual member of the home, throughout the length and breadth of this great land, and in considering a national question of such vital importance our legislators ought not to allow the pecuniary interests of any individual, corporation, or combination of commercial interests to influence or bias their minds in deciding the question, will a national pure food bill redound to the future health, welfare, happiness and prosperity of the citizens of our country? And, if, after deliberate and mature consideration, the answer be in the affirmative, then it becomes our duty, as loyal citizens with the future interests of our country at heart, and in the interests of humanity, to support such a bill, without regard to the commercial interests that may oppose it.

I hold, Mr. President, it is of far greater importance to protect the health and welfare of the home than to construct a system of great commercial power at the cost of sacrificing the best interests of the home.

Wherefore, Mr. President, standing upon this

broad platform, we, the National Retail Grocers' Association, do hereby approve of and endorse a "National Pure Food Bill"; a bill that will protect the honest manufacturer, importer, distributor and consumer. We hold, Mr. President, that such a bill will protect the honest manufacturer as against his more unscrupulous competitor; that it will give the honest distributor government inspection and an official guarantee of the purity of his products. It will inure to the interests of the consumer, in that it will require the distributor to deliver to him the quality of goods as represented with an official guarantee of purity.

Mr. President, I cannot believe that the average American citizen realizes the extent to which the adulteration of food products is carried—else, when his child asks for bread, he would not give him a stone, and when he asks for a fish, he would not give him a serpent. For the ultimate results of adulterated foods are as poisonous as the sting of the serpent.

Vanilla extract is manufactured from the tonka bean; jellies of all names and varieties, from apple parings and cores, colored with aniline dyes, glucose to sweeten and acids to lend the necessary flavor. The confectionery and candies given the innocent child, prattling at the mother's knee, by the doting parent, are too often colored with aniline dyes and adulterated with terra alba. Pure ground spices very often contain from 50 to 90 per cent of colored and parched cereals, or cocoanut shells; ground coffee, from parched Canada peas; pure apple vinegar, from salicylic acid.

We hold, Mr. President and Gentlemen, that a food standard should be fixed for the protection of the honest producer as well as for the protection of the consumer.

A national food standard should be fixed and the various state laws should be amended to comply therewith, so far as possible, in the interests of the distributor and manufacturer.

If any constituent of an article has been abstracted, it should be so stated in letters no smaller than heavy brevier gothic capitals, and if any foreign substance has been added, it should be so stated, and if any injurious or poisonous foreign ingredient has been added, the manufacture and sale of such goods should be prohibited and the goods confiscated.

We hold, Mr. President, that the penalty for the violation of any section of this law should be against the manufacturer, who, knowingly, adds to or extracts from the product manufactured; and not against the very often innocent distributor of the same. Under present existing state laws, the manufacturer very often is not amenable to the state courts, and the penalty and conviction is against the distributor. It is impossible for all retail distributors to have the hundreds of items sold by them analyzed, and, therefore, I hold they should be protected and

that prosecution and conviction should issue against the manufacturer, producer or importer of such products.

I do not for one moment, Mr. President, wish to infer that all manufacturers are adulterating their products; on the contrary, I believe that the manufacturers and packers of our food products are men of unquestionable integrity and have achieved commercial supremacy through honest and persistent efforts, and I would strew the laurels at his feet and crown him for his success.

We further hold, Mr. President, that the penalty for violation of this law should be through seizure and confiscation, by process of libel for condemnation, and proceeds of sale should be paid into the treasury of the United States, and that after confiscation is made the proceedings of such seizure and confiscation should be made public through the trade press, representing the interests of the retail grocers, and through the local daily press.

I believe, Mr. President, that more can be accomplished in enforcing the pure food laws by publishing the confiscation proceedings in the various grocers' and manufacturers' trade papers than could possibly be accomplished through the heaviest fines that might be imposed.

I commend this system of publicity to this honorable body for your consideration and endorsement, and I firmly believe that if a manufacturer continues to persist in adulterating his products, it will be forced off the market more effectively by this means than through any system of fines that might be imposed.

In conclusion, Mr. President and Gentlemen, I pledge you the support and co-operation of the National Retail Grocers' Association, representing thirty-five states and eighty-six thousand retail grocers.

As president of the National Association, I tender you my services in the interests of the worthy cause which you have so well espoused.

CHAIRMAN JONES: We have listened with a great deal of profit to the addresses and discussions and up to the present time I believe we have not called for remarks from any one not on the program. We have with us to-day one who I think is an authority upon these questions, from his great experience and the amount of work he has been doing. I have been in the National laboratory of chemistry and it looked to me as though there were four or five hundred chemists there. He has had a world of experience, and if it is not asking too much I think we would all like to hear from Dr. H. W. Wiley, Chief of the Bureau of Chemistry, U. S. Department of Agriculture, upon these subjects.

ADDRESS OF DR. H. W. WILEY.

Mr. President and Gentlemen:

I shall not take up much of your time, but I

want to say a word on the subject of saccharin, which we have heard so ably discussed in the two papers which have been presented. I am sure we are all glad to have the subject presented in the way in which it has been to-day, a careful array of the authorities in the case and a careful statement of their results, and the careful drawing of the conclusions from the results presented.

I want to consider just for a few moments, not the question of authority which was cited, and but few of the other points, but just one little point in regard to the character of the reasoning based upon the statements which were presented to you. There are two points in connection with use of saccharin to which the attention of this association has been drawn. Let us assume, Mr. Chairman, for the time being, that saccharin is a perfectly harmless substance; I am willing to make that assumption, as was claimed in the papers presented. Let us assume it is used in the small quantities in which it is claimed. Take those two things for granted. Then is its use still justifiable and is the reasoning which is presented by the canner sound? In the first place it was stated that the sole reason for the use of saccharin was its condimental character, its sweetness, and therefore its being taken as a substitute for sugar. Now any consumer, it seems to me, who wants to have a substitute for sugar, ought to have it, and I should have no objection if every one of the eighty million consumers of this country should demand of manufacturers the use of saccharin instead of sugar; that is their right. But is it right to force the saccharin on them without their knowledge when they believe they are using sugar? I claim that it is not, what these gentlemen claim they are doing, an honest, straightforward, business.

Again it is stated that the principal reason for using saccharin is to avoid fermentation, because if you use sugar and water in a can the sugar will form a dangerous compound with the corn. Now that is a new principle in chemistry that I do not pretend to contradict; but it is a new principle to me that if you heat sugar in connection with an organic substance it forms a dangerous compound; I am glad to know it, that when that dangerous compound ferments it must still be sugar, because only the sugars ferment; it has not been changed enough to change its property. Now if you use saccharin and water that dangerous property is not found and no fermentation takes place. I am under the impression that the corn itself contains almost all of its substance as fermentable matter, the starch when converted into sugar is fermentable, and sweet corn contains a large amount of sugar, which is fermentable. Why is it that when saccharin is added no fermentation takes place, while if you add a small quantity in addition to

sugar, fermentation does take place? Is cane sugar any more fermentable when added than the cane sugar which is present to the extent of from 3 to 6 per cent? I want more light on that subject. It seems to me the argument shows conclusively the antiseptic properties of saccharin; if it proves anything it proves that, or else I don't understand the principles of logic, and I confess I do not very much. Now in the first place I would like to have the evidence that this dangerous compound of sugar is formed. I would like to have the evidence to show why it is the sugar contained in the corn does not ferment when the saccharin is added, and I would like to know why the sugar that is added does ferment. Those are three questions on which we all want information.

It was further stated that the amount of sugar consumed was not more than twenty grams a day. Statistics show that we consume more nearly eighty grams of sugar per day per head. The use of saccharin as a substitute for sugar is perfectly proper and legal whenever the consumer wants it. I contend that the substitution of a substance which has a sweet taste and is not sugar, for sugar, and when consumed leaves the impression on the consumer that he is eating sugar, is a deception; therefore the use of saccharin in canned goods, if the consumer does not know it, is one of the plainest cases of deception that can possibly be presented, in my opinion, in the whole range of substances added to foods. I believe that the principle enunciated by the speaker is not a correct one, that it is time enough to condemn a substance added to food when it is found to be injurious. The idea should be that it is time enough to add substances to food when they are proved to be healthful. I do not believe anybody has a right to add any old thing to food because nobody has called it harmful. I do not believe anybody has any right to add anything to food that nature does not add unless there is some reason for it, and that reason must be that it is a better compound and a better substance than it was before. I doubt Dr. Eccles' statistics which show more people are killed by eating pure food than there are by eating adulterated food. In the first place, I don't believe very many people were ever killed by adulterated food. I am not one of the people who think there is a very great increase in the attendance at the graveyard due to the practice of food adulteration. In other words, the injury to public health, in my opinion, is the least important question in the subject of food adulteration, and it is the one which should be considered last of all. The real evil of food adulteration is deception of the consumer, and every consumer has the right to have the kind, character and quality of food demanded, as is stated in the English law, and I agree that that is a splendid law, because it says that the pur-

chaser shall have the character, kind and quality of material which he asks for. That is the basis of the English law, and when you demand a can of Indian corn you do not ask for saccharin and you ought not to get it, and when you do get it the English law has been violated. France and Germany and Spain and Italy all prohibit the use of saccharin in any kind of food products. I think it is true, as the speaker said, that the real reason for this is an economic one, to encourage the use of sugar, and not by reason of its influence on public health, and I am not opposed to the use of saccharin chiefly because it injures public health. I don't care what the public takes if they want to take it, nor do I believe that we should say that no substance injurious to health should be in food products, because if we did we would exclude every food product that is known, because the health had been injured and people have been killed by thousands and hundreds of thousands by eating pure foods. They all contain substances injurious to health if eaten in the wrong way or in improper quantities or at the wrong times. What we want to get at is to say those substances shall not be added to foods that are not naturally in them unless the person who adds them is able to show the product is improved thereby and the health and prosperity and honesty of the community are improved thereby. So assuming the argument to be true that saccharin is harmless, that it is not antiseptic, and that it is a condiment, granting everything claimed for it, the right to put it in food does not follow. That is only to be done by the demand of the consumer, and when that is done, sweeten his product with saccharin, then the moral right to add it is unquestionable. But when he does not so demand it, and when he supposes he is getting sugar instead, then there is no moral right or legal right to add saccharin to food.

DR. CASPARI: I think I can enlighten Dr. Wiley on one of those three propositions, though I do not profess to be an expounder of logic. One of the points made by Dr. Wiley was that saccharine when added to canned corn, under the conditions I mentioned, actually was an antiseptic.

PROF. WILEY: I did not say that. I said the logical conclusion from the argument was that it was an antiseptic. I did not say it is.

DR. CASPARI: I said in my paper, if I remember correctly, that the canners of canned corn added a certain amount of sugar and water to the corn in order to make it palatable; that there was not enough sugar in the ordinary corn to make it sweet enough for the public. I said further that under those conditions the sugar would ferment and give rise to a certain kind of spoilage entailing a loss of money to the packer, and furthermore, that spoilage not being able to be detected until the can was

opened. I said the sugar would form a dangerous combination—the word “dangerous,” perhaps, may have more than one meaning: that does not mean that the can is going to explode, that it is dangerous for any such reason as that, but it forms a dangerous medium for the production of bacteria or whatever may be the cause of fermentation. It does not form an explosive mixture like sulphur and chlorate of potash. The very fact that if sugar be omitted from the canned corn the corn will not ferment shows positively that the fermentation is due to the sugar. That has been tried. Now, the people want sweet corn. They don't demand corn sweetened with sugar. They want sweet corn, and canned corn that is not fermented when they open it. If that sweetness can be given to corn by saccharine, a perfectly harmless substance, why is it a deception, and why does that show that saccharine is an antiseptic, when corn sweetened with sugar will ferment and corn without sugar will not ferment and corn with saccharine does not ferment? Isn't the saccharine acting negatively? It is perfectly passive so far as fermentation is concerned. It simply sweetens in place of sugar where sugar gives rise to fermentation and gives rise to more favorable conditions for fermentation. I do not see, since sugar is not added on account of the food value it has, but simply on account of the sweetening, why saccharine should not be substituted for it if you can be assured when saccharine is added that there is nothing present which will cause fermentation. Sugar will ferment; saccharine will not. Sugar will sweeten it; so will saccharine. Sugar causes no harm to the human body, neither does saccharine. Everything seems to be in favor of saccharine. They have all the properties in common except that sugar will ferment, saccharine will not. If we class saccharine as a condiment, why should not it merit the same favors that other condiments do? Why should saccharine, of all the condiments, be selected to have its name printed on labels where it is used? It would be a different thing if it were a poison. Do we say “this food is salted with a salt containing magnesium chloride”? It is the magnesium chloride which causes it to refuse to come out of the salt cellar on a damp day. That is because salt is not pure. Do we say “this salt contains magnesium chloride” or “this food is salted with salt containing magnesium chloride”? Do we say “this tincture of fruit extract contains alcohol and cannot be used in prohibition states” and yet that alcohol is added as a preservative and for no other reason whatever? I absolutely fail to see, on the ground of logic, how Dr. Wiley can maintain his position.

DR. WILEY: He has enlightened me as to

what a dangerous compound is. Now I would like to have him tell me why the sugar that is contained in the corn does not ferment when saccharine is added.

DR. CASPARI: I presume the saccharine is added when there is not enough sugar in the corn. That is the object of adding it.

DR. WILEY: Do you mean to say sweet corn, not processed at all, does not contain sugar enough to ferment?

DR. CASPARI: I should say there was enough to ferment.

DR. WILEY: Then why is it it doesn't ferment? It is the same sugar you add.

DR. CASPARI: I am not prepared to grant that. Sugar in corn is not there as sugar; it is not there in the usual state of sugar.

DR. WILEY: You come into my laboratory and I will extract six per cent from corn and show it to you.

DR. CASPARI: But it is in a different form when extracted.

DR. WILEY: It is pure cane sugar, the same as you add. You must not get your logic mixed up.

DR. CASPARI: I am no physician; I am not in the same class with you.

DR. WILEY: Here is a phenomena; here is cane sugar, six per cent, we will say; it is not all that sweet, but some of it is, which, when processed and treated with saccharine, will not ferment. You add one or two per cent of the same sugar and process it and it does ferment. Don't you know that sugar ferments because it is not processed sufficiently, and don't you know it wouldn't ferment if all the germs were killed?

DR. CASPARI: Isn't a temperature of 250 high enough to do it?

DR. WILEY: It is if you do it the next day, too, but that does not kill all the germs in the corn.

DR. CASPARI: These spores are not in the sugar you add; they are in the corn. Why are they killed with one processing when you add saccharine and not killed when you add sugar, with the same temperature?

DR. WILEY: Why is it, then, that all the sugar in the corn does not produce fermentation, and when the other sugar is added it does?

DR. CASPARI: That is what I want you to answer. You treat the corn exactly the same way except this: in one case you add saccharine and in the other you do not. In one case fermentation takes place and in the other it does not.

DR. WILEY: You forget the point that if you don't add any at all it won't ferment.

DR. CASPARI: I don't say that. I say if you

add sugar it does ferment; if you add saccharine it does not ferment.

DR. WILEY: Then can you explain why sugar will ferment in one case and not in the other?

DR. CASPARI: Yes, I can explain that, provided the canner has represented it to me properly. I wrote to one of the largest canners in the country and he told me they processed the corn, heated it to 250 degrees in order to kill the bacteria and spores. He found that sugar added to the corn produced the spoilage. I could not conceive it to be anything else than fermentation of the sugar. If it were anything else besides the sugar then you would expect pressure to exist in the can, tending to bulge out the end of the can. However, the fermentation does not seem to be of that kind, as there is no pressure on the inside of the can. The canner terms it "acid fermentation," which does not mean anything to you or to me, either. The fact of the case is simply this: that if he uses no sugar in the corn, but cans it the way it comes from the farm, no fermentation takes place, but it is unpalatable; now he adds sugar to make it sweet, and something happens in there to turn the corn sour. What it is I do not know, and if he uses saccharine in place of sugar to replace the sweetness it does not ferment.

DR. WILEY: It seems strange that sugar has such peculiar qualities in different states or different combinations. The housewife adds sugar to her fruits to make them keep, so that they won't ferment; the canner finds he adds them to make them ferment, so that if the housewife adds them they have one property and if the canner adds them they have another. Now, Mr. President, the fact of the case is, when you come down to the fact, he uses saccharine because it is cheaper, and does not cause so much expense.

MR. COBB: I came here for the purpose of learning something and finding out what I could in regard to saccharine, but from the nature of the discussion it would look as though I would go home without having found out very much. I realize Mr. Wiley's position, and yet I understand on the other hand that the law is administered, and necessarily anything said by Mr. Wiley here is going to have a very wide effect. In fact, when I corresponded with several of the state officials they usually quoted what Dr. Wiley had to say, and I was interested in seeing Dr. Wiley and hearing his talk, only it does not present the subject in exactly the way I would like to have it presented.

Now in reference to this matter of sugar, I think canner quoted is somewhat mistaken. But to go into the history of corn packing a little, I would say that nothing but sweet corn

is used. Now all canned goods, when they are put up, there is an endeavor to season them to make them palatable to the trade, and if we are putting up peas or beans or any other article in tins and we show samples to jobbers or grocers they criticise the flavor as not having enough salt or not being sweet enough, or not having a palatable, salable flavor. It has been our endeavor to accomplish this flavor, and some ten or fifteen years ago some canner thought he would supplement the work of nature by adding to sweet corn a certain amount of cane sugar. Of course it was quite a secret, but the different canners found out that this man used sugar, and used a little sugar themselves to help the flavor. After a time trouble was met with in sour corn without swelling. That probably came through the fact that each canner in trying to outstrip the other in flavor used more sugar, and the more sugar there was used necessitated a longer process, but the canners were brought sharply to the fact that something was wrong. When they did not increase their process they found that their canned goods were souring. I do not dispute Dr. Wiley's claim that the longer process kills the spores, but the canners did not find out the necessity of the longer process or a process at a higher degree of temperature until they had sustained the losses, although I will say there are some very peculiar things in connection with the use of sugar in fruits and the action is not altogether the same in every instance. Take, for instance, plums, if we put them up in water, without any preserver being used, by taking them out of the larger cans and putting them in glass, the minute we add sugar we are liable to have a good deal of trouble in sweetening.

Now in reference to this question of deceit. After a while the manufacturers brought around a certain compound that they said was all right. I endeavored to find out what that was with my knowledge of chemistry, consisting of some quantitative and a little qualitative analysis and with what reading I was able to get on the subject; I looked into it and believed it was perfectly fair to use it as it produced a milk flavor. Now we use about one-twentieth of a grain to the pound, and that is about twenty-four ounces to something like 200,000 cans, or about one part in 200,000. Some use one-eighth of a grain to a can. It is simply a question, if we don't use saccharine we don't use anything. It is an added expense; sugar is an added expense. We use that to please the jobber and to give something a little better, possibly, than the other man, and in using saccharine we have something that costs us less money for the same thing. But we have never indicated to the public in buying a can

of corn that we were going to give them sugar or that we were giving them sodium chloride or that we were giving them oxide of hydrogen, but as a matter of fact they have got those things. We use more salt in the process than we do either of sugar or saccharine in endeavoring to produce this flavor. I will say, by the way, that we put up a great many foods, and we never use saccharine in making syrups, although I understand saccharine has been used in making syrups. We buy thousands of barrels of granulated sugar every year and use cane syrup, but when it comes to a question of flavoring peas or string beans or corn, we are seeking to find an article that is proper to use, that is harmless and that it is right for us to use. I know the better class of canners use it because they have a reputation for good goods and they want the use of it. We are not seeking to defraud the public, and we will be money ahead if we don't use it. The only question in my mind is, whether we have a right to use it at all to bring out the flavor. If I believed it was harmful, not for a minute would I use it, because I always make it a practice in my own business to put up nothing but what I would eat myself. Now I must resent the implication that there is any desire to deceive the public. I understand what is termed needless deceit and deceit in the ordinary term.

DR. MALLET: There is one question which bears on the discussion, that saccharine is a condiment, pure and simple; it is not a food. Sugar has a two-fold character; it is a condiment and a food, too. When a person eats sugar, he does so not simply for the desire to gratify the sense of sweetness on the palate, but he also receives nutritive matter, and it does seem to me that it is in a sense a deception to produce the impression that food, sweet food is being presented, when as a matter of fact there is no food value in it, but merely the taste of sweetness. The relation, possibly, between the two is very great, one part of saccharine being equal to 550 parts of sugar, and it rather exaggerates that element of deception. I do not use the word "deception" in any invidious sense at all, but the ordinary customer assumes that he is getting sugar when he receives a sweet taste, and when he is getting saccharine he is getting something that has no nutritive value.

MR. COBB: I will say that sodium salt has been pronounced by authorities not to be dangerous, even if the acid salt were. It of course is not a food, and what you say in reference to the subject of deception would apply to that as well, if it can be considered such by putting into a can a thousandth part. If in putting into a can a two hundred thousandth part of saccharine we deceive the public, I very much fear

that we deceive them a little greater than that once in a while, because I know that invariably in the process of manufacture a little piece of cob will get in there, and especially with reference to the cob, I don't think it has any food value, so far as that is concerned.

MR. SCOVELL: I understand you to say that the corn will preserve better without the sugar than when you add the sugar. Is that true?

MR. COBB: No, I say that in using sugar the natural competition caused them to continually use more of it, each man trying to distance the other man in flavor. In the meantime, the processing, the length of time retorting the goods had not been increased to overcome the extra fermentation that might arise by reason of the greater amount of sugar. In other words, by reducing the amount of sugar and supplanting it to that extent with saccharine, leaving all the sugar that is in the corn, there is less danger of fermentation, while there would be more chance of fermentation if cane sugar were added to the corn. There is no difference at all. The more sugar you have, the greater the amount of fermentation.

MR. SCOVELL: You can can it without any sugar.

MR. COBB: Yes, it would simply be a question of putting nothing in. So far as deceiving the public is concerned, we can be accused of that even by adding a greater quantity of salt. In other words, the public, when they buy this canned corn, don't say "we are not buying salt," but we are giving them more salt than we are saccharine. We thought we were giving them a proper and wholesome food, and my idea is to find out if there is anything wrong with the use of saccharine. If there is, that is the end of it; we use very little anyway; but if it is wrong, we want to know it.

MR. SCOVELL: The New York Experiment Station has been making experiments for the canners in New York on this subject, and they have gotten out a bulletin on that question, and they find that by heating it a little higher, from 240 to 250 degrees, they prevent this fermentation altogether by the use of saccharine.

MR. MCPHERSON: I believe this argument that is being taken up this afternoon is simply a repetition of the old argument in regard to glucose. I helped build the first glucose factory, probably, that was put up in America, and there was some difficulty with it. Now when the law went into effect people did not want to put the word "glucose" on their products, but they have gotten over that now and they call it "corn syrup" and we don't hear any one kicking. If they want to use saccharine, why not label it. That is all Dr. Wiley asks,

and that is all anybody asks. If there is no harm in using saccharine, just put it on your can. Who is going to object to that if it is not harmful? Why should you put it in there and not let everybody know it? The fact that the manufacturers are advocating it makes every consumer suspicious of it. If you are using it, say so, and label it such, and if the medical fraternity say it is not harmful that is all right and that is all that anybody wants. The food law simply asks that you be honest. You can sell me anything under the heavens for food or drink if you tell me what it is, and when the manufacturers object to anything like that they give the impression to every food commissioner in the United States that they are dishonest. Just label it what it is; tell everybody what they are getting. They have a right to demand it and they are going to keep on demanding it until they get it beyond all question, and it doesn't do the manufacturer any good to refuse to tell them.

MR. ANKENY: Just one word. We have in the state of Ohio a firm that claims to be one of the largest canners of corn and other canned products in the United States. The proprietors of that firm have told me more than once that they use nothing whatever but the corn and the heat in canning, nothing whatever.

DR. CASPARI: The point which the speaker made is one which I brought out, that the corn, if no sugar is added at all, or no saccharine is added, can be preserved all right without any fermentation. Now Dr. Wiley claims the reason that saccharine is added to canned goods is because it is cheap.

DR. WILEY: Mr. Chairman, I do not want to be misrepresented in regard to this matter. I stated that the logical deduction of your reasoning was that the only thing that that logic would show kept the corn was the saccharine. I didn't say it was added for that purpose.

DR. CASPARI: You asked why it was added—if it wasn't more cheap. That is what I understood you to say. If that is the reason, that it is cheap, is that a crime? Why should not the manufacturer be allowed to manufacture his goods as cheap as possible, providing he does not overstep the law or harm the public thereby? The gentleman who spoke before Mr. Ankeny, stating that the statement should be on the label that it contained saccharine, I have no objection to that providing every other manufacturer were compelled to do the same thing.

MR. MCPHERSON: In the first place, saccharine is not a food in any sense of the word.

DR. CASPARI: Is salt?

DR. WILEY: Yes.

DR. CASPARI: It is not food; it has no nutritive value.

DR. WILEY: No nutrition could take place without it. It is absolutely indispensable to digestion.

DR. CASPARI: That may be, but it is not a food. Wouldn't that include sodium chloride, magnesium chloride? Must all food that is contained in cans be absolutely free from magnesium chloride or not?

MR. MCPHERSON: I move that we proceed with the next order of business.

DR. CASPARI: I don't see any reason why saccharine should be discriminated against if you admit it is a condiment and has no harmful effect on the human system. Is the word "saccharine" such a bugbear that you are afraid of it?

DR. WILEY: Yes. The word itself is a deception and the person who invented it meant it to deceive, because saccharine is a word which means something else altogether within the last two years, a word whose meaning was absolutely established in the English language, and it was simple robbery to take a word in the English language which meant one thing and apply it to something which it did not mean at all. Saccharine has been a fraud from its inception. It is a fraud to-day and will be so until it is labeled exactly what it is.

DR. CASPARI: Call it "benzoic sulphinide."

DR. WILEY: Call it that.

DR. CASPARI: That wouldn't scare the food commissioners half so much.

DR. WILEY: I am not a food commissioner, but I don't think they are so easily scared as you think they are.

DR. CASPARI: If anybody can answer me why saccharine as a condiment should be discriminated against, in view of the other condiments that are used, I should like to hear it.

DR. WILEY: Because it is a fraud, and resembles another substance for which it has been substituted. Suppose somebody should discover a substitute for common salt in which one part would have the same salting power as 550 parts of common salt and he should put that in meat and the meat would be salty, that would be a fraud.

DR. CASPARI: I want to be shown that the name "saccharine" as applied to benzoic sulphinide is a fraud. If it is, what is saccharine?

DR. WILEY: Saccharine is a coal tar product.

DR. CASPARI: I mean the other definition.

DR. WILEY: "Saccharine" means sweet. It is used constantly by sugar men. They say sugar cane has so much saccharine, and so forth.

DR. CASPARI: I would like to ask Dr. Wiley if the use of the word "saccharine" is sufficient-

ly known to consider its being applied to benzoic sulphinide a fraud?

DR. WILEY: I think so.

DR. CASPARI: By the long suffering public?

MR. HOBBS: There is one other idea that has not been brought out. Primarily, what is the object of putting sugar in the corn? Is it to sweeten it and make it appear like good, nice, fresh, sweet corn by adding to that commodity a natural ingredient that corn has got in it, when it is not up to the standard? Isn't that the reason primarily why the sugar is put into the corn, and not for a preservative or anything else, but to make it appear like nice sweet corn.

MR. COBB: I will say that the object of putting sugar or saccharine into corn is to help out the flavor. When a manufacturer of canned goods seeks to sell his product he runs against the jobber and the jobber lays down certain rules and specifications to which he must conform, and among the various kinds of canned goods we turn out I do not know of one that does not have among the specifications to the trade, color and flavor. Now in reference to corn or peas or anything of that character, the jobber wants to be satisfied with their flavor. Now corn does not at all times possess the same sweetness the same year; it does not exactly correspond with another and one field of sweet corn may not turn out the same as another, and that is watched very carefully, and the men who have charge of it seek to make the flavor uniform, and it is simply with the idea of conforming to the demands that come to us through the jobber that corn shall have such and such a flavor, produced by salt or sugar or saccharine or whatever it may be, that we have used saccharine.

MR. MCPHERSON: Do they ever specify saccharine?

MR. COBB: Never that I know of. They say it shall be sweeter.

MR. MCPHERSON: Are you not satisfied they mean sugar and not saccharine?

MR. COBB: We make no secret of the matter at all with them any more than we do with you.

MR. MCPHERSON: But does the consumer always understand what he is getting?

MR. COBB: Nobody expects to buy a lot of sugar with their sweet corn. Now we don't use, as has been said sometimes, field corn, and attempt with the use of saccharine to bring it up to the grade of sweet corn.

MR. MCPHERSON: Don't you think it has ever been done?

MR. COBB: I don't know—possibly in the west. It is not done in the east. I know there is a character of corn raised in the west that they might use.

MR. HOBBS: It is simply a question of buying the best seed corn they can get for canning purposes. If a man goes into the market and buys poor seed he raises poor corn.

MR. COBB: A man may buy the best seed obtainable and plant it under the most favorable conditions and still not have the best kind of corn. A man hasn't absolute control over the crops, unfortunately. My friend here on the right asked if sugar wasn't added to corn to make it a nice, palatable product. I think it is, and for no other reason, and that is exactly the same reason why saccharine is added.

PROF. SCOVELL: I think there is one point that has not been brought out as well as it might be, and that is, what is the objection by canners to putting on the label exactly what they use? If it is sweetened with saccharine, what is the objection? I did not hear it. What is the objection to using saccharine and stamping that on? And if they do that I think we will all agree that there is no use discussing it any further. If the manufacturers are willing to put the word "saccharine" on their labels, what is the objection to that?

MR. HOBBS: I don't think we do agree on that. We have got to agree first, that saccharine is not an obnoxious substance, but to allow it to go on the market simply because it is stamped on the can, we are hardly ready to do that yet.

PROF. SCOVELL: That would be at least one step, if they would put that on. Now what is the objection to putting that on?

MR. COBB: I suppose that is addressed to me. I want to find out just what will be required, but I am not afraid to put it on the label. I will be willing to tell you anything I use in the plant.

PROF. SCOVELL: If you put it on the label we have got to allow it.

DR. CASPARI: I think the reason why some of the canners don't want to put it on the label is because it is the only substance in the can which is compelled to be put on the label, and there are other substances used which are no more or less harmful.

PROF. SCOVELL: I think that is begging the question. I think the reason why they don't put it on is a recognized reason, and that is, that the purchaser will think it is a poison or something, but after they get used to it they will be glad to have it.

DR. CASPARI: That is what I meant to intimate, that they were discriminating against us; the fact of having it on the label would lead the public to avoid that kind of corn. In other words, the word "saccharine" is a big stick which is wielded before the public and prevents them from buying that corn, and as long as you put the word "saccharine" on the

label while another man puts on it that it is sweetened with sugar, it prevents them from buying that.

PROF. VAUGHN: It seems to me that there have been two or three mistakes made in this controversy, and I certainly should not agree with Dr. Wiley in everything he says. Now we all know, to go back to first principles, that we eat food, theoretically, at least, in order to furnish us with energy and to build up our bodies, and we need about four ounces of proteids, two ounces of fats and eighteen ounces of carbohydrates every day, and the sugar we eat makes an important part of those carbohydrates. Now as I understand it, if I read it correctly, Germany and France and Italy have not excluded saccharine because it has been proved to be harmful, but because the people will be deceived into believing that they are getting a foodstuff when they are not getting a foodstuff. Now that's just it, isn't it? Now another thing: I certainly would not agree with Dr. Wiley in saying that the health part of this is not worthy of consideration at all. Now here is something that we ought to face and understand; shall the parent be allowed to feed his child upon skimmed milk and give it that and nothing else? There is nothing poisonous in skimmed milk, is there? There is nothing poisonous in it, and yet the state holds the right to say that the parent, through ignorance, through avarice or through niggardliness, shall not starve his own child. Now that is right, isn't it? Dr. Wiley says when people demand saccharine in their foods let them have saccharine. This whole question of coloring and flavoring foods has come because people have demanded it. How did food coloring begin? Because people demanded June butter all the year round and the only way that you could give them June butter was to color it. Now so far as I know, that is where the coloring of foods in this country began. Now it seems to me that the office of the food commissioner is to see that the people are not deceived, first, in anything that affects their health. Now as to whether saccharine is harmful or not, never mind. I don't know, and I don't think anybody else does. The experiments that have been made upon saccharine are contradictory, and until it has been abundantly proven that saccharine is not harmful, it certainly should not be used. Now here is a substance which everybody admits is not a food, and as it is taken into the body and passes through the body unchanged it does not furnish us with any energy at all; we are not able to do any more work with it than we are without it. Now it is a serious question with all things of this kind whether they can pass through the body without doing the body harm. The kidneys are

doing some work, and they are doing the work of excreting a thing which has been of no service to the body whatever, and it is fair to presume in all of these cases that a substance which is of no good to the body and which the organs of absorption of the body must take in and which the others organs must cast out, is harmful to the body, because it is throwing upon both sets of these organs work which does not add one iota to the energy or strength of the body, and it is fair to presume at the very start that those things are harmful, and until saccharine is absolutely shown to be harmless it should not be administered or allowed in any food, and the presumption is that it is harmful.

Now I differ in toto from Dr. Wiley, that the health consideration is of no importance. I will admit that it is an important economical question, but it is also a health question, and it is the duty of the state to see that every individual, when he buys a food, gets the proper amount of foodstuffs. The economic value of a food depends upon the kind and amount of foodstuffs that we buy for a unit of money, and saccharine is not a foodstuff, and a man who eats a saccharine food and thinks that he is getting sugar is deceiving himself, and the man who sells it as sugar deceives the public—I don't mean in any offensive way.

MR. COBB: Do you believe the consumer of canned corn buys it for the sake of the carbohydrates he gets?

PROF. VAUGHN: He buys it primarily for the food value in that can of corn, and when he tastes it, he estimates its food value, so far as the carbohydrates are concerned, by the sweetness of the taste. That is the only test he can make. If you bring it to the chemist to examine and determine the amount of carbohydrates it creates, they will tell you just what the food value of that corn is; but the man who buys it and eats it says "there is so much sugar in this because it is sweet" and he believes he is getting so much foodstuff when he is not. Isn't that all right?

MR. COBB: Won't you take into consideration, please, that in putting in the saccharine there is not taken out any of the carbohydrates that are in the corn?

PROF. VAUGHN: I know, but you make the man think he is getting more sugar than he is getting.

DR. CASPARI: You asked at the beginning of your remarks whether it was not so that saccharine was not restricted in Germany and France because the governments realized the people were not getting what they were asking for.

PROF. VAUGHN: Yes.

DR. CASPARI: It wasn't on that account, but

because the government ceased to receive large revenues from the manufacturers of sugar that they had previously obtained. You also said that in taking saccharine a person received nothing in increased energy, and that it was not a food and simply caused the organs to act and was without any advantage to the body and was therefore harmful.

PROF. VAUGHN: Presumably harmful, yes.

DR. CASPARI: Now in a can of corn there are four ounces of a fifteen per cent solution of sugar in water. Now fifteen per cent of four ounces is very little sugar. Do you think it would make much difference in a man whether he eats that amount, as to the amount of energy?

PROF. VAUGHN: Certainly. Every gram of that sugar that he eats represents forty-one calories of heat, and it is like going out and running a steam engine. You estimate the amount of heat there is in the coal, and the man who buys the coal, if he buys economically, makes an assay of the coal and determines the number of heat units in it before he buys it. Now we are little more than steam engines, and the fuel that we eat has the sugar and other carbohydrates, and so forth.

DR. CASPARI: Well, there is absolutely no reason why sugar should be added to canned corn at all.

MR. EMERY: I would like to ask the gentleman a question: Do you think that the consumer of butter in February or March wants to have June butter?

PROF. VAUGHN: I have always understood that that is the reason why butter is colored.

MR. EMERY: As a matter of fact, when you consume butter in February or March, do you want June butter?

PROF. VAUGHN: No.

MR. EMERY: Do you believe you are getting it?

PROF. VAUGHN: I stipulate that all my butter shall not be colored, but the butter that sells in St. Louis in the market at the biggest price is June butter, and in order to make it all June butter they color it.

MR. EMERY: If you believed in February or March that you were getting June butter would you pay as much for it as for fresh butter?

PROF. VAUGHN: I would not.

MR. EMERY: No, nor anybody else. That knocks your argument all to pieces.

MR. SHEPARD: The point is right here: Some things can be kept in cold storage. Did you ever hear of it?

MR. EMERY: Do you want cold storage butter made in June, in February or March?

MR. SHEPARD: That is the idea.

DR. WILEY: I am not going to discuss the butter color question, because I have had my

scalp taken on that several years ago. I have been opposed for twenty-five years to the coloring of butter, and expect to be until I die. I wanted to set Prof. Vaughn right.

PROF. VAUGHN: I knew Dr. Wiley did not mean what he said.

DR. WILEY: I said I assumed for the purpose of this discussion that saccharine was harmless. I didn't say it was, at all. It was simply to emphasize the argument I was making. I entirely agree with Professor Vaughn, and if he will read my borax bulletin he will find that argument in full that he used, in regard to the organs being overburdened with work.

MR. LADD: I wrote to 125 canners and packers for information in regard to the use of saccharine, and out of that number 72 per cent stated that they used no saccharine whatever, and that they did not find it necessary, and 40 per cent stated that they used sugar in the sweetening of the corn, and the consensus of opinion of the 125 letters I received from those experienced in the matter was that if the man who used saccharine used sugar and heated it sufficiently high there would be no trouble, and in the majority of the cases, or a great many cases, the claim was made that those men who used saccharine had the advantage of the others, that it cost them less and the sanitary conditions about the factory were not required to be kept the same, and that therefore saccharine ought to be kept out for that reason. Now it seems to me that that settles the question as to whether it is necessary to use saccharine or not. In regard to the labeling, I offered to allow them to label their cans "saccharine" in North Dakota. They would put that label on the cans when I would catch them, and not until then. I then wrote to a large number of packers and told them if they were willing to put on their cans "This can contains the following ingredients and none other" and then enumerate them, I would allow it, but there wasn't one of them that was willing to do it, and I concluded then it was time to rule against saccharine.

DR. CASPARI: I would like to ask Professor Ladd what the constituents were he asked them to enumerate.

MR. LADD: The constituents in the can, if the can contained sugar, salt water and so on. There wasn't a single canner who answered my letter that said he was willing to do it. They objected to labeling it anything whatever.

CHAIRMAN JONES: I understand Professor Scovell has had some experience in regard to this matter. In my state, or in Chicago, they have asked me to rule against this, and I have been up against the real thing, so I would like to hear from him.

PROF. SCOVELL: There has been so much said that there has been a good deal of irrelevant matter crept in. The law says that we shall name our preservatives, and therefore we demand that saccharine be named on the package if it is used in any quantity whatever. The state law of Kentucky says that all preservatives or antiseptics shall be named if used in any package of any substance, and we have put this in that class and saccharine must be declared. We hold that it is put in not only as a preservative, but as a substitute for sugar. To illustrate, in regard to the substitute: There was a manufactured article on the market that was selling for lard that was made wholly out of cotton seed oil and the parties were of course fined for its use, but we suggested that they name this, not lard at all, as it was not lard, but that they name it something else and call it a substitute for lard, and if they wanted to advertise it that way they could; it was truthful. They subsequently named it "Snowdrift" and said "This contains no hog lard whatever, but pure cotton seed oil," and now it is rapidly taking the place of lard in our state, I must say, because it is sold under its true name. If saccharine is, as the gentleman claims, not unhealthful, and we cannot prove that it is unhealthful now, and under our state law we have got to list it that way—if it is all right and persons want to use it and harm comes from it, if they label it that way they can do it. I think myself it should be called a preservative and they can label it until it is known absolutely it is harmful; and I think when it is substituted for sugar the name "saccharine" should appear instead of sugar.

DR. CASPARI: I would like to ask Prof. Scovell what justifies him in placing it under the head of antiseptics?

PROF. SCOVELL: I think one of your arguments would do that. Your argument is that when you put the saccharine in it prevents fermentation.

DR. CASPARI: But the fermentation is not there when no sugar is added.

PROF. SCOVELL: I think you are mistaken about that.

DR. CASPARI: Well, I am from Missouri.

PROF. SCOVELL: The reason I make that statement is that I just read that bulletin from New York where any number of fermentations took place where there was no sugar when it was heated to 230, but when they heated it to 250 degrees it absolutely prevented fermentation. That is the reason I spoke as I did.

DR. CASPARI: I am not prejudiced in this matter at all. I simply thought saccharine was being misused. If I can learn anything about it, whether it is an antiseptic, or harmful, I want to know it.

MR. SHERWOOD: The Iowa Cannery Association, comprising about sixteen of the packers of corn in Iowa, passed a resolution at their annual meeting about eighteen months ago that in the future no saccharine should be used in their corn. We have analyzed a long line of samples of Iowa corn, which is sold almost exclusively in South Dakota, and we have neither found saccharine in it nor a can of spoiled corn because it was not put in or because damaged corn was put in. We have never found anything but first grade corn, perfectly satisfactory both to the chemist and to the consumer.

CHAIRMAN JONES: We are getting along nicely, and still we are a little behind with the program.

SECRETARY ALLEN: I have just been handed a communication from the commissioners from Porto Rica, Venezuela and Guatemala asking that Mr. August E. Gans be allowed to address the Congress on the subject of the misbranding and adulteration of coffee.

CHAIRMAN JONES: Is Mr. Gans present? If not, the communication will be laid on the desk and taken up at some future time. The next thing on the program is an address by Mr. McConnell.

MR. McCONNELL: I have asked Prof. James A. Wilson, who is connected with our department, to read my paper.

CHAIRMAN JONES: I am sorry to say on behalf of Mr. McConnell that he has been in poor health for some time and for the last two or three days has not been able to attend, but he is now feeling better.

#### ADDRESS OF HON W. W. P. McCONNELL.

"Our Great Dairy Industry and Purity and Adulteration of Dairy Products."

Mr. Chairman, Ladies and Gentlemen:

In approaching the subject assigned me by your committee I have realized something of the vastness and importance of the task before me. I have been keenly conscious of the fact that this National Association of Dairy and Food Departments, under whose auspices this Pure Food Congress is being held, represents a great agricultural nation in which the dairy industry is the leading branch, and as I travel about this great country of ours I come more and more to regard the name of United States and that of industry as synonymous terms. It is a very remarkable truth that all of our states and all of our countries have peculiar adaptations. We have in the extreme south our fruit belt, next comes our cotton and tobacco belt, then we find what is known as the "hog and hominy" belt, and finally on the north our wheat belt, while some would add a butter belt, but not bound it with parallels of latitude. There are successive zones of our great

country where nature has apparently distributed various crops, where they would thrive the best, but two or three centuries of experience in American agriculture have proven beyond a shadow of a doubt that the one crop system will not prove successful, no matter what the crop may be.

The dairy industry affords the best, and in fact the only true means for diversification in our agricultural system, and to this phase of modern farming we owe, in many parts of the United States, the redemption of a depleted soil and salvation from an impoverished and stagnant business condition.

It is a most fortunate thing that dairying as an industry has no strict boundary lines, neither as to latitude nor longitude. In Minnesota we are almost constrained to believe at times that we have the only ideal conditions for butter-making, which are a fertile soil, luxuriant grasses and grains, pure air and pure water, but the statistics from states and countries in other latitude will not uphold any such narrow and selfish view. However, considering the fact that we are comparatively in our infancy as a dairy state, it speaks well of our people to be able to say that we have in Minnesota 774 creameries and 90 cheese factories. This growth in modern dairying has taken place during the last fourteen years, and has had a most beneficent effect upon the prosperity of that great state. The same revolution has followed in the wake of this splendid industry as it in earlier years has permeated the other states surrounding Minnesota, notably Iowa, Wisconsin and the Dakotas.

But I must hasten my hearers to another phase of this subject, viz., "Purity and Adulteration of Our Dairy Products."

Milk in its natural state is the symbol of purity. Its whiteness is suggestive of everything that is worthy, pure and true. Born of the mother love it nurtures the young of all mammal creation, whose life experience would be but temporary were it not for this life giving fluid. When we speak of milk as a perfect food it is with reference to it in its pure form and fed to the young of the mother from whom the milk is derived. For man and lower animals at maturity and under stress of hard work, it cannot be claimed that milk and its products will maintain bodily strength and vigor, notwithstanding the fact that they contain all of the elements of life. The chemists analysis shows a variation of composition in the normal cow's milk, but a fair average is found to be 87 per cent of water and 13 per cent of milk solids. The solids are composed of fat, casein, albumen, milk sugar and ash. The fatty composition varies in different samples of normal milk from 2½ to 7 per cent. It is in the water and fat content of the commercial product that the sin of adulteration makes its appearance. In some states a water per centage of 88.5 is allowed,

while the legal requirement of fat is 3 per cent. In Minnesota the standard for fat is set at 3.5. This we have found to be too high in the case of city milk venders, who keep Holstein cows and in some instances they have been compelled to supplement their herds with Jerseys or Guernseys. On the other hand you will frequently find milkmen with herds of cows noted for the richness of their milk in butter fat, who are obliged to purchase a few Holsteins to produce a quality of milk that will satisfy the demands of their trade. I know not how conditions may obtain in the South, or in the East, but with us in the Northwest we find considerable difficulty in preserving the natural purity of our market milk against carelessness in handling during the time that elapses between the cow and the consumer. Right here is a great source of impurity. I visit with no little pleasure and profit when time will permit a certified milk plant, on the banks of Lake Minnetonka, near our city of Minneapolis, which is owned and operated by A. C. Loring, president of the famous Consolidated Flour Mills of that city. Here to the true dairyman the worth of milk as a human food makes a silent, resistless appeal to treat his cows with kindness, provide for them comfort and contentment, and make an especial effort to prevent carelessness or untidiness in the handling of milk and prevent robbing it of its fresh purity and wholesomeness.

Mr. Loring is running this plant on a profit paying basis. A new modern barn that accommodates some sixty cows has a floor of Portland cement, a ceiling 18 feet high, perfect drainage, and perfect ventilation, and an abundance of light, there being 56 large windows in it. I would say in passing that the cows that inhabit this steam-heated dwelling are of the choicest Guernsey blood known to the best breeders of dairy stock. There is a strong demand for this milk and it is becoming stronger among consumers and especially so among the medical fraternity and parents who are attempting to care for and rear bottle fed children. About three-quarters of a mile from the barn is the "hospital," an institution without which the farm would be incomplete. Here is where any diseased or suspected member of the herd will be kept, so as to eliminate all danger of the remainder of the herd becoming infected. The herd is tested every six months and any member suspected of disease will not be allowed to remain in the herd, but will be immediately removed to the hospital.

It is Mr. Loring's strong ambition to equip and conduct a certified milk plant that will be equal to, if not surpass, anything of its kind in the United States. It is the earnest intention of the owner to provide extraordinary sanitary conditions for the production of pure milk and retail it in the Twin Cities. It will be produced under

a guarantee, and under rules that require that there shall be the smallest possible number of bacteria in every cubic centimeter of the milk. This is of course, practically pure milk and would find a ready sale on the market.

Where the milk is received in thoroughly cleansed pails, and loose hairs, dust and dirt are prevented from falling into the milk during milking; where the air is pure and free from dust, the bacterial content of the milk will be greatly reduced. In a series of experiments carried out by Dr. Russell, bacteriologist of the Wisconsin Experiment Station, the following results were obtained:

Milk received under ordinary conditions contained 15,500 bacteria per c. c. Milk received with above precautions contained 380 per c. c. A repetition of the experiment under winter conditions showed 7,600 bacteria per c. c. in milk, as ordinarily milked and only 210 for same volume where above precautions were observed in milking.

A large number of tests were made to determine this matter at the Purdue Experiment Station during the years 1895 and 1896. The tests were made under as large a variety of conditions as possible, commercial dairies of all descriptions, and in private dairies that were kept in an exceptional manner. The average number of germs falling upon a surface the size of the usual milking pail, in four minutes, the average time for milking one cow, was 17,600 in the average dairy; in a good many it was 8,080, and in a dairy having a separate milking room and taking the precaution to wipe off the sides of the animal and the udder, 720 germs. In some of our poor and unclean places where we find no ventilation, scarcely any sunlight, no bedding in the stalls, and the milking being done by a lazy man, whose chief amusement is chewing tobacco, permitting it to flow down over his beard in an unbroken stream; whose hands are covered with the dirt of the previous summer, under these conditions it is safe to say that the number of germs runs up into the hundreds of thousands.

Referring again to the certified milk plant. The conditions under which the milk is secured are all that can be desired, and it now remains to study the handling of the milk after it has been drawn from the cows. For the purpose of properly handling this milk, and putting it in bottles for shipment, a new brick dairy building has been erected about three hundred feet from the cow barn. Just adjoining the cow barn is the weighing room and sampling room, where the milk is weighed and a sample taken for testing, before the milk is taken to the dairy building. It is carried there by the means of an endless cable, which is operated by an engine in the dairy building.

In this building the empty bottles are taken

into the washing room where they are thoroughly cleansed. They are then placed in a patent sterilizer where they are rendered absolutely free from bacteria. They are then taken out into a room and filled with milk by means of a patent made for the purpose. The filled bottles are then placed in a refrigerator and cooled immediately and kept at a low temperature. The precautions which are taken in order to have the milk absolutely pure are interesting. Before a workman enters the bottling room he must first go into a room and divest himself of all clothing, then pass into an adjoining room, where he is given a shower bath and rubbed down. From here he goes into the dressing room, where he secures a suit of clothes which have been previously sterilized.

By the time a man passes through this ordeal he is ready to come in close proximity to the milk. The milk is to be hauled to Mound City and thence shipped to Minneapolis and St. Paul.

A laundry is also part of the equipment of this model farm, where the washing is done for the men on the farm and in the dairy. Cleanliness is the watchword at Woodend, and all of the expert work is thoroughly executed by a young man who is specially trained for it.

Public sentiment is being aroused and our health departments, improvement leagues, mothers' clubs, milk venders, associations are all knocking at the door of our pure food departments asking the way to peace and pardon, and the great proportions that our so-called market milk business is assuming deserves our most grave and careful attention. I wish to say in closing this purity phase of my text that I have no patience with preservatives in any form, and experience has shown that milk put up under the above conditions and kept at a low temperature will keep for a period of two or three weeks. Now to the subject of adulteration permit me to say that no honest business requires it and no other kind of business deserves the protection of the day. Preservatives, colorings and adulterations put a premium on uncleanness, carelessness and dishonesty.

Our recent fight in the United States Congress against cheap substitutes for pure butter is still fresh in our minds. We owe a debt of gratitude to the National Dairy Union, who so ably championed this movement, and we will not soon forget the part taken in this fight by the farmers and dairymen of this country. In fact the force that has been behind most of the pure food legislation for the past eighteen months has been the American farmer. By his activity and influence he has brought into life and reality the pure food commissions of several states, and demanded not only laws but the machinery to enforce them. You will remember how the farmers laid siege to Congress and fairly compelled that body to

pass the oleomargarine law of 1886, which was amended and passed, becoming our present effective law in 1902.

The American farmer is slow to move very often, he is often flattered and imposed upon by new fads in agriculture. He often appears to be asleep on public questions, but when he is thoroughly aroused and his judgment can be secured it is very reliable because on the whole intelligent.

The year previous to the enactment of the law placing a ten cent tax on oleo colored in imitation of butter 27 factories turned out an amount equal in quantity to 25 per cent of the butter product of all the creameries in the United States. Practically all of the oleomargarine manufactured in the United States is made by the simple process of churning a melted mixture of oleo oil and neutral lard with milk, cream or melted butter to give it the butter flavor and coloring matter to give it any desired shade of yellow in semblance of butter. In the cheap grades cottonseed oil is often substituted for a portion of oleo oil and neutral lard, but never to the total exclusion of either. After the churning process the whole is salted and put upon the market in a variety of forms, as demanded by the various classes of consumers.

An example for a formula for a medium high grade of oleomargarine is oleo oil 315 lbs., neutral lard 500 lbs., cream 280 lbs., milk 280 lbs., salt 120 lbs., and color 1-1.2 lbs., making a total of 1,496-1.2 lbs., which will produce 1,050 to 1,080 lbs. of oleomargarine.

Some have said that our oleomargarine law is the result of class legislation, an effort on the part of producers to deprive the poor of a cheaper product. Others are pessimistic regarding the effectiveness of the law and believe it just as honest to color oleomargarine as to color butter and will evade the law whenever and wherever possible, settling with their conscience later. Many admit the purity of oleomargarine and would sooner eat it than pure butter. It is the opinion of some that the export trade will take all of our oleo oil and that the finished product would find its way back into our markets, where there are no state laws to prevent its sale. The end of our trouble with this sworn enemy of the dairy interests of our great country may not be at an end, but the facts remain that while oleomargarine may have its rights, it is very deceitful and no one has a right to defraud.

Our renovated butter is a formidable competitor of our creamery and dairy butter in that it is such a good counterfeit and sells at from 2 to 3 cents below the price of our best creamery article. And on the other hand it is a means of escape from an inferior product known as packing stock butter, nearly all of which is farm dairy butter and forms less than five per cent of the to-

tal dairy butter of the country, which amounts to about 40,000,000 pounds a year in the aggregate.

The legal requirements of a manufacturer's license and a tax of one-fourth per cent per pound have helped to secure a more wholesome product and has aided in the prevention of fraud.

Our total renovated product forms but about one-twelfth the amount of our creamery butter and with the increase in our creamery business this substitute is likely to grow less and less much to the profit of the farmer and the delight of the country merchant, who in many cases is forced to handle so much of this packing stock in his local trade.

Before closing I would like to say a word with reference to our cheese industry. During the early part of my commissionship I found the markets of Minnesota flooded with skim cheese, which was palmed off on the unsuspecting public as full cream cheese. The source of this cheese was traced to a Chicago firm that was selling through commission firms in St. Paul and Minneapolis. Seventeen thousand pounds of this cheese was confiscated and sold where it would do no harm to full cream cheese and the proceeds, together with the fines from the commission firms, amounting in all to \$8,500, went into the state treasury.

But this skim cheese evil crops out occasionally during late winter and early summer, when people are looking for new cheese. Many of our cheese factories are not operated during the winter and this increased demand is met frequently by this poor counterfeit.

I know not how New York, Wisconsin and other of the cheese producing states have encountered the evil of the skim cheese fraud, but it has been our experience in Minnesota that since the skim cheese has been forced out of the market our factories are running the year around and can pay as good and better prices for milk than the creameries do.

Our cheese industry in Minnesota is but in its infancy. I believe that in this branch of our dairy business there is a great source of profit for our people if our legislation is kept rigid and the markets protected from fraudulent competition.

Time and strength fail me to call attention to another great and growing phase of our dairy enterprise, viz., that of condensed milk aggregating an estimated annual valuation of \$12,000,000 in round numbers. This branch of dairying should receive our earnest attention for two reasons: First, the opportunities for adulteration are many and are being extensively practiced, and second, our condensed milk exports are increasing rapidly every year while our export trade in butter and cheese is waning. Hence the reputation of our dairy products abroad rests in a great measure upon the purity of this product.

Here is a specific instance where we have most

urgent need of national legislation. Furthermore, the consumption of condensed milk in our own country is becoming very extensive, especially as a food for bottle fed children and invalids. Disease transmitted through this medium is being detected almost daily. A case of recent occurrence in one of our western cities, where a little child had lingered for weeks in a diseased condition, was being treated by physicians who kept administering remedies and altering the amount of milk given until there seemed to be no hope of recovery. The milk was taken from the child as a last resort and she became well. The milk was found to contain boric acid.

I think that it may be truthfully said with reference to oleomargarine, renovated and process butter, our cheese product and also our condensed milk, that the national pure food laws are exceedingly meager, and far behind the state laws in several of our states. In fact our federal government has no pure food laws except in relation to the standards to be met by imports. Thorough inspection, rigid enforcement of our state laws, modern education in the art and science of dairying, the evolution of machinery and methods employed, and the refinement of taste and demand for pure dairy products have all had their beneficent influence, and it seems to me now that there remains for our national government to safeguard our dairy produce against fraud and adulteration and preserve the health, yea the lives of our people, by weaving about this splendid industry with its \$600,000,000 worth of annual production an impenetrable armor of federal law.

In conclusion, my hearers, I cannot resist adding a word with reference to the phase of this great dairy business which deals with production. You will pardon me for referring again to my own state. The professor of dairy husbandry in our agricultural college has been carrying on a test of a large number of cows with the aim of demonstrating to the farmers of the state what good feeding and proper care of the herd will do by way of increased financial returns, his experiment has been carried on during a series of twelve years or more. A number of the cows were dairy bred animals while many of them were common cows gathered from the farms in various portions of the state. They have been fed on nothing except those grains, grasses and forage crops that grow on the farms of Minnesota. The yearly yield in milk has been very uniform. Selecting the two years 1895 and 1896 the record shows that the cows of the whole herd yielded for the calendar year 351 pounds of butter per cow, being a net profit of \$44.90. A division of the herd into two groups shows that the dairy bred animals yielded 453 pounds of butter and a net profit of \$63.51 per cow per year; and the common cows averaged 287 pounds with a net profit of \$32.24. To my mind these records show two very im-

portant demonstrations. First, that by proper care and feeding good returns can be secured from both dairy and common cows; and second, that where the dairyman is educated and experienced in his business so that he is capable of handling a high bred dairy animal, the difference of \$31.27 of animal profit in her favor offers a great inducement, and puts a large premium on intelligently guided effort. Many of the cows on our farms are kept at an annual loss. Statistics of one of our northwestern states shows the average animal yield of their cows to be 125 pounds of butter, which means a gross return of \$25 and a loss of \$17 per cow, which is the direct result of improper care and feeding. Estimating that there are 550,000 cows being milked it means an aggregate loss of \$9,550,000 to the farmers of that state.

The 12th report of the census bureau shows that there are approximately 18,114,539 milk cows in the United States. We have almost a million of them in Minnesota. In many of our best herds individual cows are giving five to six hundred pounds of butter annually. In other herds they are giving less than one hundred pounds per cow. This condition indicates a great need for not only better cows but better dairymen. A cow should prove her ability at the pail or she must be turned over to the beef trust. If Dan Patch had not proven his value through his marvelous speed his rare beauty would have been a poor excuse for the payment of a fabulous price. So the value of the dairy cow must be based in large measure on performance.

There is a great and growing need throughout this great country of ours for a more widespread instruction in agricultural subjects in our public schools and colleges. The young men and women of our farms must have a more extensive and thorough knowledge of the questions pertaining to the farm and the farm home if they are to be successful in modern business competition.

There are many to speak on this important subject and I must not detain you or use any more of your valuable time. I desire to say in closing that I very much regret my inability to enjoy the deliberations of this Congress. I have had a hope and a faith to believe that out of this gathering there is to develop directly definite national legislation.

You have my heartfelt and sincere wishes for a marvelous degree of success, for I feel that in our country at least, the three great factors that are to lead in the perpetuation of American civilization are the Cross of Christ, our public schools and pure and wholesome food.

CHAIRMAN JONES: On account of the large number on the program we have not been able to get through, and Mr. Noble and Mr. Price will be heard in the morning. The others have requested that their papers be printed in the

proceedings the same as if read. To-night we will hear Dr. Wiley, who will represent Secretary Wilson, as I understand it, in his address, and also Mr. Frederic W. Taylor of the Agricultural Department of the Fair, at Festival Hall, and if there is no objection we will now adjourn.

An adjournment was then taken until 9:30 a. m., Thursday, Sept. 29th.

#### FESTIVAL HALL.

Evening Session, Wednesday, Sept. 28, 8 P. M.

PRESIDENT BAILEY: It is to be regretted that our audience is not larger this evening, but it is possible that this meeting has not been well advertised and proper notice given, and there are many other attractions, and we can all appreciate the fact that it is hard to get an audience together on every occasion. Dr. H. W. Wiley is here, as you all know, from the Department of Agriculture to give you a talk on Food Adulteration, and I now have the pleasure of introducing him to you.

#### ADDRESS OF DR. H. W. WILEY.

Mr. President, and Ladies and Gentlemen:

I am quite certain of one thing, and that is, that the vast majority of the audience will remain until the close of the lecture, because I believe the chairs are all fastened to the floor. But it is not always the size of the audience that counts in this world. Some of the greatest reforms that have ever swept over the face of the earth for the good of mankind have been started by a very few people; in fact, large crowds are hard to handle and there is apt to be too many opinions to be very effective in action. It seems to me we ought to be almost unanimous to-night.

The subject which has been assigned to me is one which has been the theme of many an address and I fear that I can add very little to the literature already extant on this subject. There are, however, some points which it seems to me ought to be considered and perhaps more precisely formulated. Dr. Vaughn this afternoon made a statement which probably ought to be an introductory one to this address; that is, he defined food. What is food? Because unless we know what food is, or have an understanding in regard to the matter, we certainly could not formulate any definite statements respecting food adulterations. Now food is that which, taken into the body, builds tissue, repairs waste and furnishes heat and energy. All these things are necessary in nutrition, and anything which serves in any way either to build tissue, repair waste or supply heat and energy must be considered as food. Now the most abundant food which we take is water. We have made some interesting observations during the past two or three years on the weight of food which a good, healthy young man consumes, and the results were somewhat surprising. We

find that a good, healthy young man will eat four and one-half per cent of his weight per day. You can figure out by that just what time it will take him to eat his head off. But of that four and one-half per cent, perhaps three-fourths of it is water. That is, if a man weighs one hundred pounds, he will consume on the average four and one-half pounds a day, and if he weighs one hundred and fifty pounds, just one-half more than that. Now that seems to be a large figure, but it has been determined by combining the weights of many rations which have been fed in the past few years. When we reduce that to dry matter of course you understand it is very much less, and it takes a man longer to eat his head off in dry matter than in ordinary foods. Nevertheless, water is one of the most essential of foods, because it forms the greater part of all the tissues of the body. You have no idea how small and shriveled we would look if we were dried up. Even the bones, which we consider to be almost solid matter, are largely composed of water, so that water is the most essential of all the elements for food and nutrition. Dr. Vaughn also stated that there was a certain balance in the foods, that they were composed of certain elementary substances, and he mentioned the three classes, the most important classes of foods, namely, the protein or nitrogenous foods, the fats and the carbohydrates, of which latter sugar and starch are types. Now the natural food of man is balanced, as they say, between these three great elements of the ration, and experience has shown what a balanced ration is. We find that the average man in a state of health eats a ration in which the carbohydrates plus the fats, multiplied by two and a quarter are about six or seven times as much in weight as the nitrogenous foods, and this is what we call a balanced ration. If he eats more of the carbohydrates and fats in proportion to the other foods, we say it is a wide ratio, and if he eats less than the average we say it is a narrow ratio. Now the same principles which guide the feeding of farm animals should guide the feeding of the human animal, because we have exactly the same principles existing in the animal creation in this respect; that is, in those animals which resemble man in the character of the food which they eat, and they all practically do except the flesh eating animals alone. For instance, a steer eats a food which in its balance is very nearly the same as that of man, but the farmer has learned to vary the ratio for the purpose of the feeding, and if he wants fat he increases the amount of carbohydrates in the food; if he wants labor he increases the amount of protein in the food to repair the wasted tissue which is worn out by the hard labor; if he wants very hard labor, then he increases again the fats and the carbohydrates to furnish energy and heat. Now for instance, take

the laborer in the South, where the temperature is usually high, as it happens to be here just now, and the labor is very hard and the hours of labor are long, and you will be surprised to see the amount of labor which a human being can do when almost his sole food is fat pork and corn bread, because that is a ration which pre-eminently furnishes heat and energy, the fat of the pork and the carbohydrates of the bread. At the same time the bread contains enough of the nitrogenous element to supply the waste of the muscular tissue. Then we have one other class of foods quite as important as the three which I have mentioned, namely, mineral foods, because certain mineral substances are just as essential to nutrition as the fats or the carbohydrates or the nitrogen. Among these I may mention first of all lime, of which the bones are largely composed, and phosphoric acid, also existing largely in the bones, and in addition to those mineral substances many others, such as iron, enter essentially into the constitution of the tissues. Therefore a food embraces all these elements.

Food is fed to man in two states, the natural state and the prepared state. In that respect man differs from a great many of the animals, especially the wild animals, who have no preparation of their food at all; for the domesticated animals, man prepares largely the food which they eat. Of food in the raw state I may mention fruit and nuts and things of that class that are eaten as nature provides them. The other class of foods is such as are prepared in the kitchen and by the manufacturer. Now all these things must be considered when we are defining a food, otherwise we may go astray. Therefore we say food is what I defined it to be a moment ago. It is composed of all these essential elements balanced in the proper way for health and furnished in sufficient quantities to supply the wants of the body.

Having defined food, we may have some idea of what food adulteration is. Food adulteration consists of a great many different elements, and it is so defined in all the laws in which definitions of adulteration are found. In the English foods and drugs act we have almost exactly the definitions which are embodied in many of our state laws, and in the proposed national legislation. The definitions of adulteration are practically the same in all of those acts, for there is a definite thing of which adulteration consists. We recognize several different forms of it. In the first place, the addition to a food product of a deleterious substance not natural to the food is always regarded as adulteration by every law. Having a deleterious substance naturally is not adulteration at all, because, as I said to-day, foods often contain in themselves deleterious substances, and hence it is not right to define a natural deleterious substance in a food as an adulteration, but it must be

an added deleterious substance, one which is not present naturally in the food itself. For instance, a kind of plant-producing starch which is very common and very much appreciated, the cassava, in the form which is known and used in food in every country, contains in its natural state a highly poisonous substance, one of the most poisonous substances in the world, prussic acid, hydrocyanic acid, and that substance added to a food would undoubtedly be an adulteration, but that substance naturally present in the food could not be considered an adulteration. So great is the quantity of this substance, especially in the tropics, that they do not dare to consume this highly nutritious substance until it has been boiled, because in the boiling process, being converted into a volatile gas the poison escapes, and then the material is fit for use. As grown in this country, the quantity of hydrocyanic acid is not great, and it can be used with safety without boiling. Now hydrocyanic acid also exists in the peach and fruits of that kind in considerable quantities, and the peculiar flavor of the peach, and especially of the peach pit, is due to the hydrocyanic acid, and yet no one would say the peach is adulterated because it contains a trace of this highly poisonous substance in its natural state. Therefore, we must clearly discriminate between a deleterious substance natural in the food and one which is added to it, and therefore the definition of an adulteration in the respect should be confined to an added deleterious substance.

Again, it is said that the abstraction of any valuable constituent from a food product is an adulteration. Now that is broadly true, but not specifically so. That must also be limited when we speak of an adulterated food, because there are many cases where a valuable constituent is extracted in the preparation of the food and there is no adulteration practiced. A very familiar illustration is in the manufacture of flour from wheat. In the manufacture of flour from wheat some very valuable constituents, highly nutritious constituents of the wheat grain are extracted, for instance the bran. A great many people think the bran of the wheat is nothing but silex. I have heard that proclaimed on the platform by teachers of cooking, and heard them say that you must take the bran off because it is nothing but sand. Now that is as far from the truth as anything I know of. The bran is one of the most nutritious parts of the wheat. It is a highly nitrogenous substance, containing a larger percentage of nitrogen than any other part of the wheat grain. It is very nutritious, and therefore under the general definition that an adulteration is the abstraction of a valuable component, the making of flour would be an adulteration.

Thus you see that all these definitions must be limited by actual experience, and thus the manu-

facture of flour from which the bran is removed and from which the germ is removed, retaining a large part of the phosphates, both in the bran and in the germ, is not an adulteration.

Again, in the manufacture of certain articles we have added some substances for the purpose of securing the manufacture, in the making of a maple syrup for instance, from a cane juice, we add lime water for the purpose of clarification. Now the addition of lime water to a food would be considered an adulteration *per se* under the general definition, but when added for the purpose which I have just mentioned, that of clarifying the article and making it a better article, it must not be so considered. Therefore in the determination of these definitions of adulteration we must be guided by these general principles.

Another form of adulteration which is so recognized by the law is what is termed misbranding. That is a most important point in the definition of adulteration, the misbranding of a product. Perhaps that is the most extensive of all the forms of adulteration which are practiced. Now what is misbranding a product? That is pretty hard to answer in a categorical manner, but I will try and give you what my idea is and what the courts I think have sustained as a rule when they have passed upon this question of what is a misbranded article. A substance which is partially branded is a misbranded article. For instance, I saw to-day—I am not going to speak in any discriminating manner, but just to illustrate my point—in going through the Agricultural building, in the exhibit of the Dairy and Food Commissioners, I saw a very wholesome and palatable article of food marked "Corn Syrup," but it had a red color and certainly was something more than a corn syrup, because right by it was a corn syrup that was perfectly white. Now the red article and the white article could not have been the same. One or the other was certainly a misbranded article. What was actually present there, as we all know, was, say 90 per cent of glucose or corn syrup, as it is sometimes called—I think it is a misnomer, but we will assume for the present that it is all right—what is really present in there is say 90 per cent of corn syrup or glucose and say 10 per cent of the residue from the sugar refinery which is added for two purposes, to give it a color and to give it a certain flavor of sugar sirup. I have no prejudice particularly against the residue from a sugar refinery, but it is only right that the consumer should know what that is. The residue from a sugar refinery is everything that cannot be turned into sugar; it is the concentrated soluble non-sugars of the original mass. It contains an immense quantity of mineral matter, from 4 to 7 per cent of mineral substance, the organic salts of mineral substances, so that it is a highly

mineralized food, and it contains a certain amount of sugar, both in the crystalline form and the non-crystalline form. That is what is often added to the corn syrup to give it the color. That was a misbranded article because it did not tell the whole truth. When you go on to the witness stand you are sworn to tell the truth, and not only the truth, but there is something else comes always, the whole truth and nothing but the truth. That is pretty hard to do sometimes even on the witness stand under oath. That is what a label should be. Every label should be under oath, just the same as the witness on the stand, and the label should be sworn to tell the truth, the whole truth and nothing but the truth.

The label should have been "Corn Syrup" or "Glucose, mixed with the residue of the sugar refinery," and then it would have been properly labeled. So I say an article of food is misbranded when the label does not tell the whole truth, and in the execution of the national law we will interpret it that way. The law says "misbranding in any respect." The national law says, referring to imported articles, "misbranded in any respect." The failure to mention any important ingredient is one respect at least, and therefore the failure to mention any one important added ingredient of the food, not natural to it is a misbranding.

Then again, a food product is misbranded when what is stated on the label is not true, just as much of course as in the other respect, and then it is misbranded if it says more than the truth, if it claims things to be present or claims properties which are not found. A great many manufacturers write to the Department of Agriculture for information in regard to branding, because we have an inter-state law which imposes a very heavy fine for misbranding any food or dairy product falsely in respect to the state or territory where it is made, and they have written for information in this respect. It does not seem hard for a manufacturer to follow out that law. It is the plainest possible law. Why was that law passed? Because of this fact: whenever any locality gets a reputation for making an article of superior excellence there is a tendency on the part of people living in other localities to make a similar article and brand it with the locality of the superior article. I will illustrate by the state of California, not with any discriminating intent, but simply for illustration. California is famous for its fruits, fresh and preserved and canned. Those fruits are known the world over, in every civilized country. Some of the eastern fruit growers, producing also a good fruit, saw the idea that they could get a better sale for their fruits, so they labeled them California peaches and so on. Now that was a fraud. That was a mis-

branding of that material because it led the purchaser to believe it was a California product when it was not. But the real cause of the law was due to the cheese makers in the state of New York, because it was a New York member who introduced the bill into Congress and had it passed, and he did it at the instigation of the cheese makers of New York, because New York cheese makers produce a very excellent cheese, which they brand "New York Full Cream Cheese," and it is well known and sought after not only in New York but in other states. I have repeatedly myself gone into grocery stores in Washington and asked for New York full cream cheese, and on one occasion I got a filled cheese for a New York full cream cheese. It was wholly artificial. Our agricultural friends are just as apt to catch onto this sort of thing as anybody; it is common to humanity, not to any particular class. The manufacturers are by no means the sole offenders, though they do get a better price for their cheese if they label it New York full cream cheese and make it in Wisconsin or Michigan or Pennsylvania, and this was the real cause of the enactment of this law. I think it is a salutary law, because the misbranding of an article in respect to the place where it is made is false. It is deceptive, and therefore it is reprehensible.

These are the principal forms of adulteration with which we have to deal, the addition of a deleterious substance, the abstraction of a valuable ingredient, and the misbranding of a package. When you have gone through with those three kinds, you have covered nearly the whole field. I can illustrate better perhaps by some further instances of these different forms of adulteration. We claim that the addition of an antiseptic which is injurious to health is an adulteration. I will not stop to discuss the question now of whether it is or not. Therefore, if we find for instance by experiment that boric acid is injurious to health, that is determined, say, experimentally, and then we find that substance added to a food product, we have the right to say that that is an adulterated product, because it has in it an added substance deleterious to health. Now it is no excuse to say some natural food product contains borax. We know that. Wines almost uniformly do, especially if they are grown in California, because California is one great borax mine, and even in other countries, such as France and Germany, there is borax in the soil, minute as it is, and the grape has the faculty of collecting it like no other plant that we know of, and the result is that most wines contain a trace of borax. That is no excuse. It is an incident, an accident due to the character of the soil, hence the addition of this substance is still an adulteration, just the same as if you added prussic acid to food because it occurred in the cassava,

you would have just as much justification if you added borax because it occurred in wine.

To illustrate the other form of adulteration, the abstraction of a valuable ingredient, I might refer to the withdrawal of part of the butter fat in milk and selling it as whole milk, or doing the same thing in a different way by adding water for the purpose of diluting the butter fat. These are specimens of adulteration of this kind, and the misbranding I have already illustrated.

These I think place before us in the logical way, first, what food is; second, what an adulteration is, and third, examples of such adulteration. In a general way every person interested in foods can apply these principles and determine whether or not he is practicing an adulteration. We all know in the first place that no manufacturer ever adds a deleterious substance to food for the purpose of injuring the health of the community. That is not his purpose. No one ever did, that is, no manufacturer. Some people wanting to poison their friends may have done something of this kind. It is added for a different purpose altogether, but that does not excuse it. If you tried to kill A and missed him and killed B, the law would not hold you innocent, although it was not your purpose to kill B at all; and if a man adds a deleterious substance to food for some other purpose and it is injurious to health, he is not excused because he did not mean it to be. The fact that he does do such a thing, whether he means it or not, the law holds to be sufficient evidence of guilt. In this case it is not necessary to prove purpose or knowledge of the act. And as I have just said, no manufacturer ever intended to injure the health of anybody by adding adulterations, and in point of fact the injury is not so serious, perhaps, as has been indicated, although it is a real injury; it is not necessary to kill a man to injure his health; it is not necessary to lay him up so that he cannot work, but if you work upon a man in such a way as to undermine his digestion or induce dyspepsia or lack of vitality in his digestive organs, you have done him a positive injury. The fact that you did not do it in a day or ten days is no excuse. Suppose it took you a year or two years or ten years to do it. You would be just as guilty as if you had done it in a day. And that is the flaw in the argument of using minima, as they call it. "I will admit," says the manufacturer or dealer, "that this is a deleterious substance, but I use it in such minute quantities it cannot possibly do any harm." That is false logic, absolutely false. It will not stand the test of logical cross-examination. Suppose you give a man a small quantity of a substance which is known to be injurious to health in large quantities, even for a year, and you notice no change in the condition of his health, that does not excuse you; and yet some people will say that because, for instance, if in ten days, or fifty

days, which is the longest period in the experiments which we conducted at Washington—the longest experiment which we made was fifty days—no ill effects are produced, the added substance is harmless. Suppose you had produced no bad effect at all in fifty days, that would not have excused the fact, nor would it have established the fact that borax was harmless, because it might have been harmful in the next fifty days. In point of fact, as I will speak of later, we did show deleterious effects even in ten days sometimes, and certainly in fifty days.

So the fact that a body is used in small quantities, if it is a deleterious body, is no excuse whatever, nor is it an excuse that other bodies deleterious to health may be in the food. That is no excuse for adding still one more, but rather a great argument for keeping it out. And then, as has been pointed out before, it is not only one substance with which we have to deal, but we know that there are fifteen or twenty different substances used as antiseptics, and while it is not probable, it is possible that one individual in the course of a day or a week may take three or four or five or six of these different poisonous bodies, and then the small quantities become magnified and become a large quantity, and therefore our only safety is the entire exclusion of those bodies in foods. That seems to be the reasonable method. Now the other argument comes in, and we must give all these arguments, Mr. President, full value. We must try and look at it from all sides. We must try and put ourselves in the place of the manufacturer. We know he is an honest man. We know he is doing the best he can in the light which he has, and we know he has got to make a living or else go out of the business, and he says: "Well, I have got to meet competition." Now there is great strength in that argument, "I have got to meet competition. A does this. If I don't do it my goods will cost more, and I have got to sell them at the same price that A sells his, and I will go bankrupt." And for that reason the law should apply to all alike and no man should have any discrimination in his favor, and when that is done then all are upon the same plane and have the same opportunity in the markets of the country that they had before, and so it will come, if it ever does come, that when by law all antiseptics and coloring matters are excluded from foods, every manufacturer will be exactly where he is to-day, and he will succeed or fail according to the excellence of his wares and the excellence of his business methods. So the fear that the manufacturer has that he will be bankrupted by the fact that his competitor will continue is a vain fear, which will be allayed as soon as uniform legislation in state and country is established. Therefore, I say that argument, strong as it is, worthy of consideration as it is, is not of final significance.

Now I was asked to combine the two titles which are in the program, and I will say a few words on the other part. How do you determine whether or not an added substance in foods is deleterious? I claim in the first place that the right to add a substance to a food must be established beforehand by the person who proposes to do it. He has no right to saddle the burden of proof upon the consumer. The consumer is not in the position to determine the matter. The only way he can do is to be protected by the state or municipal officials in his place, but consumers should not be burdened with the determination of a question of this kind. If I want to add anything to a food which nature does not put there, I must justify that before I do it. I must be burdened with the cost of experiment and the trouble and worry of it, and I must place it upon a plane in which it cannot be attacked. Therefore the addition of a substance to a food which leaves a food just as it was before, no better and no worse, cannot be justified, because, as Dr. Vaughn said to-day, and as is well known, it only adds an additional burden to the secretory organs of the body without doing any good. I am not asserting at all that the addition of antiseptics to foods may not at times be beneficial, but I am claiming that the person who adds them must show that they are beneficial. Now take this instance: Suppose you and I were going, as we would like to to-night, to hunt the North Pole. I think to-day is the best time in the world to organize another company to seek that movable piece of mechanism; I know I should like to volunteer; but suppose we did organize a company and we were to be gone three years, would it not be a wise thing for us to take no chances on the food which we took with us, to see that it should not decay and become unfit for consumption? I should say to the man who prepared that food, load it up with salicylic acid, or boric acid or any other antiseptic that will keep it certainly, because if it spoils we will starve, and it is far better that we should take the risk of a little injury from salicylic acid than that we should starve. I think there is no manufacturer who could not go before any court and justify himself in adding an antiseptic to food intended for an expedition to the North Pole. That is a clear justification. Now there may be many others. I do not intend to furnish them with too much ammunition, but I want to find out the way in which they can justify the addition of antiseptics to foods, and whenever you can show that the foods are improved, that they are more wholesome, that they are more nutritious, that they do more good than if the antiseptics were not added, you have won your case, and having done that, the addition of those substances follows as a matter of course, but you should not burden me with proving that, nor you should not burden

me nor anybody else with three or four years of long and tedious experiment to show that those substances are deleterious, as we are showing in some cases. Now the experiments which we undertook were not with the idea that those were deleterious substances. We banished every prejudice. We attacked the problem absolutely with an open mind. We would not allow anyone to consult any data or draw any conclusion who could not remove from his mind every prejudice and preconceived notion in regard to these matters. We simply had an open book, no writing in it at all, and we proposed to write a volume, experimentally, and when that volume was written we proposed to read it and see what it taught, and that is exactly what we have done. We have recorded every single phenomenon. We have excluded no observation. We have not tampered with an analysis, but every single figure, every single datum, every single phenomenon has been put in that book just as it occurred. Now that book will soon be before you. If we have misinterpreted it, you have the data there to correct us or to show us our error. We have made an interpretation of it and published a summary of the conclusions that it may be are wrong. You gentlemen will have the data just as we had them exactly, and I will say that there are many contradictory data in this book, and it is possible to draw different conclusions if you look at them and reason on them in a different way, and we may be wrong. Now I told you last year how we made those experiments, and I can tell you to-night some of the results of them and what they showed, and I will state further that we have concluded another series of observations which we are now writing in the book, but we have not read that book yet. Our minds are still open. Just the other day one of the officials of the State of Pennsylvania wrote me and said, "I understand you have completed a series of observations with salicylic acid. We have a case in court where the question comes up, Is salicylic acid injurious? Would you tell us the results of your experiments?" I wrote back, "I cannot; they have not been compiled, and I don't know what they are excepting so far as they were open and evident to the eye; but what the effect was upon metabolism, upon absorption and excretion of nitrogen and other elements of food, we can only tell when we read the book, which is not yet half written." But we have read the borax book, and we have recorded all the data for the book on salicylic acid, for the book on sulphurous acid and sulphites and bi-sulphites, and for the book on benzoic acid, and for the book on benzoates, and we hope in the near future to tell our conclusions and show you the data to form your conclusions in the same way.

But this is what we were taught when we read

the borax book: that in the administration of borax in quantities of from one-half a gram per day to four and five grams per day there was produced profound disturbance of the digestive functions, especially with the latter doses; even after a period of ten days there were in many cases loss of appetite; there was headache, ill feeling, and in all cases a loss of weight, although the amount of food eaten was the same as before. And then we found what effect it had on the metabolism of nitrogen, just what changes it caused in the passage of nitrogen through the body; we found what effect it had on the digestion of carbohydrates; we found what effect it had on the digestion of fat, and we carried these all through hundreds of analyses, and then we summed them all up, first by individuals, then by groups, and then all the groups into one, the observations extending over a period of eight months on twelve individuals in groups of six, and we made a statement showing the general effect upon the one individual representing the average of all the twelve, and that showed a distinctly unfavorable action of the borax on the human system. Now those data we may have misinterpreted; I don't see how we could have done so. We certainly could not in regard to the weights, because that is simply an inspection of the figures. These weights were made with the greatest care, every day, and while it is true that there were discrepancies, there were cases where weight was gained when borax was given, and that is not to be wondered at, because borax is an excellent remedy for many diseases, and in this case an incipient disease may have existed for which borax would be the remedy. We all know the value of salicylic acid is one of the valuable remedies in cases like rheumatism, and if we had had a rheumatic patient possibly he would have been benefited by the salicylic acid diet. That would not prove anything. We are not trying to tell what effect drugs may have upon the sick at all. We are trying to tell what effect drugs will have upon the well, and all the evidence points so far to the fact that well people do not need drugs, and when we give them drugs we burden them with an additional labor which sooner or later will prove injurious to the system, that is, so far as the books have been read.

Of course a man cannot help having his views, even if he is able to put them aside, as we must in investigations of this kind. We do not mean by that we divest ourselves of views. What we mean is that we do not consider our views when we construe the data, and if they had led to the contrary conclusions they would have been placed out just as prominently as those which have been detailed. It would not have made any difference with us. We did not endeavor to conceal anything or to distort anything

which we found. The evidence seems to show, I think conclusively, that even when we give borax in small quantities as we did, for fifty days, giving half a gram a day, it will produce results which are unfavorable, showing that the system does not need this drug, and while it could dispose of it by additional effort, it did so at a cost, a loss of weight and a loss of vigor, vigor which was used up in ridding the system of the foreign body largely. True, as was said this afternoon in the case of saccharin, the boric acid and borax escape almost altogether through the kidneys, 80 per cent of it, and the rest of it through the skin. But haven't the kidneys enough to do already? Why should they be called upon to excrete half a gram of borax every day in addition to the burden with which they are already loaded? There is no reason I can see. The food is not improved, there is no more nourishment in it, and certainly the body is injured.

I said I had ideas. One of the ideas I had when I commenced these experiments was that if antiseptics were injurious, that borax was the least injurious of any. That was my notion. It may be when I get through with it all that notion may be changed. I don't say that it will be changed, but I had a feeling which led me to believe that borax is the least injurious of the ordinary antiseptics, but I don't say that officially. I know of one case where salicylic acid caused the most marked improvement in the condition of the young man under the influence of salicylic acid. Now suppose the observer had taken only one person in his experiment, see how he would have been misled by the result of it. That is the reason why we took so many. I wish we could have taken two hundred instead of twelve, which we would have done if we had had the room for them.

So you see we have been burdened with this labor when it should not have been placed upon us. Why should the United States government have gone to all of this expense of time and money and men, now for two years, with a third year ahead of us, and probably a fourth and fifth, I cannot tell; because it is a great burden that has been placed upon us, why? It should not have been our work. No one should have added these things until these experiments had been made by the people who propose to do it, but that not having been done, somebody had to do it. It was too expensive for an individual, or even an institution, and so it was up to Uncle Sam, as they say, and while it does not appear to be very expensive if you look at the reports of expenditures to make these experiments, in point of fact it is a great drain upon time and men and money. It is not merely the cost of the food. Of course twelve young men can eat a lot of food in eight or nine months if they are busy, and they were

all the time, except while they were knocked out by the antiseptic occasionally, but they soon got over that and they came out in a better physical state than they went in after all—not by reason of the effect of the antiseptic, but in spite of it, because they were placed on a strict regimen, steady diet, steady habits, regular exercise, no indulgence in any excess of any kind, and the result was they were very much improved in their habits and morale, and their health as well, and as soon as they got over the effects of the antiseptic they were in better physical health than they were before. Two of them have been attending this convention, and I would like to point them out to you as pretty healthy young men, though they were pretty sick at times.

That is one way of determining this matter, but it does not seem to me we ought to go through the whole list. Suppose we had found the same results to be produced by the use of other drugs which we found in the case of salicylic acid and benzoic acid, that ought to be enough to form the basis of an inference by reasoning. I know that is not always a safe way, but when you have got the data it is a good way, and when we have got a large number of these data we can say *a priori*, antiseptics have a general effect of this kind, and therefore unless justified by some other reason should not be used. Now, I believe the manufacturers will be more glad than anybody else when these facts are established because they do not really want to use these antiseptics. They do it as a trade necessity, to hold their trade, and when these drugs are excluded they will be glad that they are no longer adding to foods things that are even questionable in character, even if they are not demonstrated to be harmful. So the principle which seems to come out of this investigation is this one: add nothing to foods that you cannot demonstrate to be helpful. The old cry, "add anything which is not harmful," is false doctrine. Just let me illustrate. The German law specifies certain things which shall not be put in foods, and it specifies those things which were put in foods at the time of the enactment of the law, and they did not think to put in things which had not been used. Now what do the Germans do? They add things not prohibited by the law and claim the law permits it. That is not the fact. The German law does not permit a thing because it does not exclude it, but it did not exclude it because at the time of the enactment of the law the substance was not used in food. Now to illustrate: we do not allow sausages to come to this country that contain borax from Germany for two reasons: first the law says if Germany prohibits it we shall prohibit it, and then secondly we think in the light of our experiments that borax is injurious and so we ex-

clude it, but what did they do? They turned around and put alum in the sausage to preserve it, and claimed that alum was not prohibited by the German law and therefore we should not prohibit it. But that is not good logic. Alum is not regarded as a particularly wholesome diet and therefore we exclude sausages even if they contain that very nice substance, alum, although the German law does not exclude it. We had one little incident which was rather trying. An invoice of sausage consigned to St. Louis contained alum and it was held up by the inspectors for that reason, and we came to find afterwards it was intended for official use in the Fair, and of course we no longer held it up. But we have this peculiar experience with some sausages, that a number of invoices which have not been admitted to this country and have been reshipped to Germany, on arriving at the German ports have not been allowed to re-enter Germany because the German law says that no piece of meat that weighs less than eight pounds can pass the German frontier, and as the pieces of meat in sausages usually weigh less than eight pounds they would not admit to their own country their own product, and they are sailing, like the Flying Dutchman, seeking a port of safety somewhere else. But this only illustrates what we are led to by experiments of this kind.

I believe we ought to give our helpful sympathy to the manufacturer. We don't want to antagonize him; he does not want to antagonize us. We want him to believe with us that there is no justification in adding antiseptics to ordinary food. There may be, in special kinds of foods intended for special purposes, as I pointed out. But where foods are intended to be consumed at home, or in our country, I can see no reason why they may not be preserved in the good, old-fashioned way, and sent out to all our people. If they are ordered for foreign countries I should not object, for one, to having them preserved in any way which that country permits and admits. For instance, the Parliamentary Committee in England has recommended the permission of the use of borax in dairy products and butter to the extent of one-half to one per cent, and there has been such a recommendation to Parliament. In point of fact, they are admitting in England butter which has been preserved in this way. I do not see any reason at all why we should question the right of the English people to eat anything they like. I cannot quite agree with Professor Vaughn, who is a good deal of a prohibitionist on food and wants to make other people eat just what he does. He took the illustration of the infant. That was not fair, because the infant does not know what it is eating; the infant ought to be protected. But I mean a man. I don't want to dictate to you what you are to eat and

drink, not by any means, and I don't want you to dictate to me what I shall eat and drink. I want to have the privilege of selecting it myself and I am responsible to myself and the law for what I select. If I want to drink a glass of beer I like to have that privilege. Some think I ought not to do that. Well, they are honest people, thoroughly honest and sincere, but thoroughly wrong, and if an Englishman wants to eat borax in butter I think he ought to do so. You know you cannot hurt an Englishman anywhere. He goes all over the world. He flourishes with equal vigor at the pole and equator. He represents every land and country, and you are not going to kill an Englishman with a little borax, and he ought to have it if he wants it. It is the same way with meat. When they order meat they order that it shall be packed with borax all over the outside, and I see no reason in the world why it should not be so. That is the custom over there and there is no reason why it should not be done, and we ought not to refuse to give them what they want. But I believe in respecting the laws of foreign countries in regard to their foods. I should like to say to every exporter in this country, "Don't send to any foreign country any food product which is prohibited in that country; don't try to evade the law of your own country, nor the law of any other country," and I should say to him, "By no means add any borax to any meat product shipped to Germany. You know it is against the German law. Don't question their honesty or sincerity or wisdom. That is their law. Respect it just the same as we want the Germans to respect our law, and that is the reason our law was drawn the way it was. It is not for retaliation, as some people think it is, that this was drawn against Germany. Not at all. It was drawn to show the Germans that we respected their law, and that we expected them to obey that law in their dealings with our country, just as we would expect to obey their law in our dealings with their country. And this same law that provides for inspection provides that the exporter of food products to foreign countries may come to the Secretary of Agriculture and get a certificate that these goods are not contrary to the law of the country to which they are sent. We want to help them enforce their laws just as we want them to help enforce our laws.

Now, I believe you manufacturers and you dealers can all stand on this broad platform which I have tried to erect here to-night, honesty of dealing, freedom from deleterious substance and respect of law.

PRESIDENT BAILEY: I want to say to those who do not know, that we are holding a very interesting International Pure Food Congress in the Hall of Congresses, Administration Building, to which you are all particularly in-

vited. The question of pure food is the one that interests every one, and if you would like to come and hear the papers and discussions we will be glad to have you do so.

Congress adjourned until 9:30 o'clock a. m. the following day, Sept. 29th, 1904.

Thursday, Sept. 29, 9:30 o'clock a. m.

Congress met pursuant to adjournment.

CHAIRMAN BAILEY: The first on the program this morning is an address by one whom you all know well from 'way down East, a gentleman who has always attended our conventions and taken a great deal of interest in our work. I take pleasure in introducing to you Mr. J. B. Noble, Commissioner from Connecticut.

#### ADDRESS OF HON. J. B. NOBLE.

Mr. President, and Members of the Association: I know that you have a long program for to-day, and I shall not detain you very long. I have no paper prepared, as I was down for a discussion and supposed that this subject was to be opened on the main points brought out by the addresses, and the subject which has been assigned me, "Coloring Matter and Antiseptics in Dairy Products," has been well covered by the papers which you have heard, and especially in the very able paper of Professor Shepard on coloring matter and antiseptics in food products, which certainly includes dairy products.

I want to say, Mr. President, that I have been very much interested in all of the papers and all of the discussions which we have had here during this very interesting and instructive convention. Now as to coloring matter in milk and butter, in the first place, in butter: you know that for years we have had coloring matter in butter. I take some exceptions to the view which was presented here yesterday by one of the distinguished authors, that it was simply because we wanted June butter the year around. It seems that the coloring matter is put into the butter in order to make it more attractive and more salable, and that the consumers like it better, and it seems many times as though there was some truth and some justice in the claim of other people in regard to coloring matter that if the dairymen and butter-makers were allowed to color their goods why shouldn't other people be allowed to color their goods? But we are very thankful that there is a growing feeling through the country at the present time for uncolored butter, and that with the keeping of better cows, better methods of breeding, producing a better article, there is a very large percentage of the butter at the present time that is put upon the market, even in the winter months, without any coloring matter, and I hope the time will come when all the butter which is put upon the market will be put upon it without any coloring matter.

As to coloring matter in milk: this subject has been very little touched upon in any of the papers which I have listened to, and yet it seems to me that this is one of the most important branches of dairy products or of food products which we have, and when we think of any producer putting coloring matter or antiseptics into milk which is to be so largely consumed by infants or children or invalids, infants obtaining almost their whole sustenance from it, and being unable to withstand the bad effects of any coloring matter or antiseptics, it seems a crime for any one to put milk upon the market knowing that antiseptics or coloring matter have been used in it. We find that there is at the present time quite a good deal of coloring matter being used in milk in different places. They want to take a poor milk, a low grade milk, and make it look like high grade Jersey milk by putting in some coloring matter, which is clearly a deception, and is making a low grade article have all the appearance of a high grade article, and at the same time making it indigestible and bad for the consumer. I certainly believe that in no instance and on no occasion and in no way should coloring matter or antiseptics be allowed in milk which is put upon the market. There should be stringent laws against anything of that kind. Milk should be produced under good sanitary conditions, as good as possible, and should be put upon the market free from any coloring matter or any antiseptic whatsoever. We believe that it is wrong and we know many of the states have these laws, and we believe that they should be carried out in every state, and such laws should be put upon the statute books. Those of you who have seen Professor Conn's bulletin, which was published some time ago, in regard to cold storage butter and cold storage cream and milk, which was spoken of yesterday, know that there have been a great many complaints about ice cream and about poisonous ice cream, and that it has been in the flavoring, or the unclean cans, or it has come from some poisonous substance gathering there. This bulletin of Professor Conn's states that where cream is put into cold storage and the poisonous bacteria have been eradicated, and then after standing in cold storage a certain length of time there is another poisonous bacteria which very often develops in that cream and makes it a poisonous product to put upon the market in the form of ice cream. Those of you who are chemists know more about this than I do. I know that the Professor in his bulletin laid great stress upon this, that people should be very careful in putting cold storage ice cream on the market, as it occasionally might be very poisonous.

We believe that the dairy interests of the country are great and growing. We in the east are small as compared to what you are here in the

west. Our whole milk industry is increasing with us. We have many small interior manufacturing villages and cities which are growing, so that the consumption of whole milk is increasing largely, and the butter factories are decreasing in their product while you of the west are increasing; but we are striving there the same as you are striving here, to make our milk and butter product of as high a grade as we possibly can. We believe that is the only practical way to make a success of dairying, especially in the east, and we should never sacrifice quality to quantity, and so throughout the country the dairy products should stand, high, clean and pure, and stand upon the markets of the United States and of the world as first class, and then the United States will have a reputation which it has sometimes not had, especially in the dairy products which have been shipped abroad. There have been times when the dairy products which have been exported have been of a rather low and inferior grade, and we hope the time will come when the whole dairy product of our country will stand on a higher grade than it does at the present time, high as it is to-day.

I wish this association success. We believe that we have had a very interesting meeting here. We are going home to put these principles which have been brought out here and these ideas, into practice in carrying out the pure food laws of the states which we represent. We believe that this association is one which is doing a great deal of good, and I wish for it a very much greater degree of success than it has even yet attained.

CHAIRMAN BAILEY: I know that the Commissioner from Connecticut has given this subject a great deal of thought and study and I believe the time will come when all coloring matter, in butter, milk and cheese, will cease to exist. We will now take up the work of the morning session, and I will call on Dr. Albert E. Leach, Director of the Food and Drug Laboratory of the Massachusetts State Board of Health.

#### ADDRESS OF MR. ALBERT E. LEACH.

Mr. Leach: Before reading my short paper, I want to say that the conditions prevailing in Massachusetts regarding the adulteration of drugs are somewhat unique, in that both the food and drug work have been done from the start under the direction of one board, the State Board of Health, rather than a food commissioner or dairy commissioner. Perhaps on that account we in Massachusetts cannot appreciate the difficulties attending the establishment of drug work in newer states under food commissions, for indeed that would seem to be the best and most ideal way of enforcing the law. It is a large problem, and I know that a committee has been appointed to

take some action in the matter of drug adulteration. I hope that the sense of the Congress will be expressed in regard to what would be the most efficacious way to deal with the question—whether or not this association wishes to give a part of its attention to drug work as well as food work, and I shall try to show briefly the importance of it. I think, however, we all realize the necessity of doing something in the way of improving the conditions which now prevail in the drug trade.

#### THE ADULTERATION OF DRUGS.

By Albert E. Leach, Analyst of the Massachusetts State Board of Health.

It is especially appropriate for a body of men whose interests are devoted to the study of pure food in its various phases, to give at least a brief consideration to the closely allied subject of drug adulteration. To those of us at least who have to do with the state control of food in the capacity of public analysts; health officers, food commissioners, and the like, it is at once apparent that there is a very close relation between the purity of food and of drugs. Indeed it seems to be eminently fitting that the two should be jointly included in the work of the government and state bureaus or commissions whose business it is to protect the public against adulteration; and this for several reasons. In the first place a very large number and variety of articles serve in the double capacity of foods and drugs, being sold both by the grocer and the druggist, such, for example, as cayenne, mustard and other spices, olive oil, cream of tartar, alcoholic liquors, essences, lime juice, grape juice, etc.

Again, many of the commoner medicinal preparations not regarded as foods are very frequently sold by the grocer, such as ammonia water, borax, glycerin, and extract of Jamaica ginger. Moreover the food analyst sometimes has occasion to consult the pharmacopoeia for standards, as in the case of lemon extract, lime juice, the alcoholic liquors used as beverages, and the like.

Another connecting link between foods and drugs is found in the various proprietary foods for infants and invalids, as well as the gluten or diabetic foods, handled alike by the druggist and the grocer.

Hence, if it is at all necessary to have both foods and drugs collected and examined for their purity, it is difficult to see how a hard and fast line can be drawn between them for purposes of inspection. Perhaps it was for these reasons that the most acceptable government pure food bills before Congress have included drugs as well as foods in their scope, and that the state of Massachusetts has for over 20 years had a practically enforced system of both food and drug inspection, under the auspices of its State Board of Health.

Now as to the relative importance of food and drug control: I have long regarded the adulteration of foods as a question involving in its evil effects the public purse rather than the public health, at the same time taking the ground that even if this is the case, there are still the best of reasons why every effort should be made to hold it in check. How infinitely more important is it that the purity of such preparations as are used for their medicinal effects should receive at least some degree of attention from the authorities enforcing the laws against adulteration, and yet how few are the states that give any concern at all to this subject.

Think for the moment of the far reaching effect of the wholesale adulteration of a chemical salt or other preparation used as a drug. It may be that its use in medicine is very general. Not only is the public defrauded as regards its price, but by reason of its gross inferiority, the physician has good reason to doubt its therapeutic value, and through no fault of his own, to attain the most uncertain results by its use in prescriptions. Yet we can readily see that if no attempt whatever is made to check the adulteration of drugs by a well enforced system of government or state inspection, the extent of such adulteration is bound to become actually appalling. And it is just such a situation that confronts us to-day.

There is no doubt that drugs are more seriously adulterated than foods, largely because there is no substantial check to the practice.

I may be pardoned perhaps for referring more particularly to examples taken from our experience in Massachusetts. Even in our state we have not been able to give the full attention to this matter of drug adulteration that its importance demands. According to our state law, three-fifths of our entire annual appropriation for food and drug inspection has to be spent in the restricted field of milk and milk products, leaving the other two-fifths to cover the entire domain of foods other than milk and of drugs. Hence we have to limit our energies to the most seriously adulterated classes of drugs, and we can readily see that the extent of drug adulteration is far in excess of that of foods.

It is a lamentable fact, that in many cases where the same articles are sold as foods and as drugs, as for example in the case of the spices, the drug store article is more subject to adulteration. This state of affairs is contrary to what one would naturally expect, in view of the fact that not only is a higher price paid for the drug store sample, but whenever a person wants an unusually pure article for medicinal purposes, as in the case of capsicum or mustard for example, he instinctively turns to the drug store as being the appropriate place to get without question the pure article. Statistics would seem to show,

however, that he had better run his chances with the corner grocery.

Thus, during the last six years, of the total number of samples of cayenne collected from groceries as foods and analysed in our laboratory, 13.5 per cent were adulterated, while of the total samples of capsicum taken from drug stores, 18 per cent were found adulterated. Moreover the assortment of adulterants found in the drug store goods was fully as varied as in the grocers' samples, including among those capsicums examined last year such substances as millet, exhausted ginger, wheat, corn, redwood, turmeric, and anilin dye stuffs. One sample of drug store capsicum was found to consist almost entirely of buckwheat, turmeric and a coal tar dye.

Another example along the same line is found in the alcoholic liquors of the pharmacopoeia, such as brandy, whisky, white and red wines, and the like. In spite of the higher price paid in the drug stores for these articles, statistics of our Board's reports do not show any improvement in quality over the liquors usually dispensed in the saloons throughout the state. A large number of the latter class of beverages have in past years been purchased from liquor dealers and analysed by us for the sake of comparison, and if a particularly choice French brandy were needed for medicinal purposes, I should have little hesitation in recommending the consumer to consult a reputable liquor dealer, rather than the average drug store. This is indeed a sad state of affairs.

Out of all the states there are but nine that do not have some kind of laws on their statute books regulating the sale of drugs, and in most instances making the sale of adulterated drugs a misdemeanor. This shows that the importance of legislation along this line has not escaped attention, but the pity of it is that so few of the states, even those that are doing efficient work in enforcing the food laws, give any attention at all to the practical enforcement of the laws for ensuring the purity of drugs.

Our Massachusetts food and drug law to-day is practically the same as when it was first adopted in 1882, and on it have been based the general food and drug laws of many of the other states. In accordance with this law, under the term drugs are included all medicines for internal or external use, antiseptics, disinfectants and cosmetics. A drug is deemed to be adulterated: 1. If, when sold under a name recognized in the United States pharmacopoeia, it differs from the standard of strength, quality or purity prescribed therein. 2. When sold under or by a name not recognized in the pharmacopoeia, but is found in some other standard work in materia medica, it differs from the standard prescribed in such work. 3. If its strength, quality or purity falls

below the professed standard under which it is sold.

The pharmacopoeia and dispensatory not only fix standards, but also in many cases detail methods of assay, whereby the druggist, if he cares to do so, may ascertain for himself whether or not his goods are pure. Many articles of the pharmacopoeia are not in themselves subject to adulteration.

In the earlier years of our work the collection of drugs was naturally somewhat indiscriminate, with a view to ascertaining the classes most liable to adulteration. Having established this point, attention has since been given mainly to these suspected classes. It is for this reason that the ratio of adulteration of drugs examined by us as recorded in our annual reports, is greatly in excess of the actual adulteration of the drugs sold throughout our state. This ratio of adulteration varies from year to year. In 1903, for instance, 1113 samples of drugs were examined by us, of which 41.5 per cent were found to be adulterated or below the standard.

The pharmacopoeial preparations most subject to adulteration are found to be such substances as ammonia water, ether, chloroform, the tinctures and fluid extracts, spirits of nitrous ether, distilled water, the fruit juices, the essential oils, the spices, olive oil, sulphur and the alcoholic liquors.

Take for example one of the simplest and yet most important of pharmacopoeial preparations, distilled water. If you should collect a few samples of this easily prepared product from the drug stores in your immediate locality, I am sure you would be surprised to find how far they varied from the requirements of the pharmacopoeia. It is difficult to see why samples of pure distilled water are so rarely dispensed from the average drug store in this age when the question of purity of our drinking water is so prominently brought before us. In many cases, I regret to say, the result of our analysis indicates that ordinary tap water has been sold under the guise of *aqua destillata*.

I have already shown how far from pure are the pharmacopoeial liquors. Not only are such preparations as tincture of iodine, spirits of camphor, lemon extract and bay rum found below the standard in strength, but wood alcohol instead of grain alcohol is sometimes used in their composition.

Of the tinctures, iodine easily takes the lead as being most often below strength. Contrary to the popular impression among druggists, it is by no means difficult to prepare tincture of iodine of pharmacopoeial strength, nor does this preparation decompose rapidly, if properly kept. We have even found samples of this tincture to contain 100 per cent more iodine than the pharma-

copoeia calls for, showing the fallacy of the argument so often heard that the standard is excessively high and impossible to attain. Of course with such unstable preparations as spirits of nitrous ether, one can hardly expect in all cases to keep the druggist strictly to the mark, and more or less judgment should be exercised in dealing with articles of this character.

Tincture of opium or laudanum is another tincture frequently found with less morphine than the pharmacopoeia requires, being naturally more commonly adulterated than the powdered opium from which it is made.

The so-called washed sulphurs are more often than not found to belie their name in that they commonly contain free sulphurous or sulphuric acid. Precipitated sulphur is also liable to contain calcium sulphate, due to improper preparation. It is not uncommon to find as much as 50 per cent of calcium sulphate in this drug.

Chlorinated lime, so frequently used as a disinfectant, as ordinarily purchased, seldom contains more than a small percentage of the available chlorine which the pharmacopoeia calls for, viz.: 35 per cent. Brands are often found with as little as 2 per cent of chlorine.

The above are only a few examples of the most commonly adulterated of the official drugs to which it would be well for enforcers of the law to devote more or less attention. In addition to such articles as these, during the course of its work in the inspection of foods and drugs, the Massachusetts Board of Health has had occasion to examine a large number of proprietary medicines, as a rule for the presence of a single ingredient only, to which special attention was called by reason of its questionable effect on health. Under this head are included tonics and bitters sold as temperance beverages, which were usually examined for alcohol; various empirical preparations such as cosmetics, hair dyes, complexion beautifiers, freckle lotions, and the like, examined for injurious metallic salts; so-called cures for the alcohol and opium habits, and many others.

The amount of alcohol annually consumed in patent medicines by would-be total abstainers is enormous. In fact, as is now becoming more and more apparent, many of the most popular proprietary cures depend entirely for their toxic effects on the alcohol, opium and other objectionable principles which they contain, and are frequently consumed by people who could never bring themselves to drink a glass of whisky. Take for example the "blood purifiers" or sarsaparilla remedies. Sarsaparilla itself has no well recognized therapeutic properties, but these preparations depend mainly on the effect of the alcohol and potassium iodide which they contain. The

alcoholic content of the most commonly advertised brands varies from 10, to 25 per cent by volume.

Many "purely vegetable tonics" widely advertised as containing no alcohol or as entirely harmless, and free from stimulants, or even as recommended for inebriates, are found with from 10 to 50 per cent of alcohol. A very widely advertised "Stomach Bitters" contains 44.3 per cent alcohol by volume. Another so-called Sulphur Bitters, which purports to contain no alcohol, was found as a matter of fact to contain 20 per cent of alcohol and no sulphur. The doses recommended upon the labels of these preparations vary from a teaspoonful to a wineglassful, and the frequency of the dose from one to four times a day, "increased as needed."

Many of the cures for intemperance are found to be high in alcohol, and the opium cures to have variable amounts of morphine. Can one conceive of greater frauds than these?

Many catarrh and asthma cures have been found to depend for their efficiency on the presence of cocaine. All the available brands of hair vigors and hair restorers have been examined by us for lead salts, most frequently lead acetate, which has been found present to the extent of 2.5 per cent in some cases.

Face lotions and complexion bleaches are commonly found to contain corrosive sublimate. In one instance, 14 grains of the bichloride of mercury per fluid ounce was found in a bottle having a label guaranteeing the contents to be perfectly harmless! Such bottles should at least contain a poison label with the antidote.

Still another fraud is found in the spurious gluten flours sold to diabetic patients as low in starch. One sample of alleged "pure vegetable gluten" sold by a reputable Boston druggist under his own name at 50 cents per pound was found to contain about 60 per cent of starch, the substance which of all others the diabetic patient is paying a high price to avoid. This sample was practically whole wheat flour at 50 cents per pound.

Perhaps it is hardly necessary to cite more than a few instances of the humbugs with which we meet, such as the liquid malt extracts, which differ from beer only in respect to price, containing absolutely no diastatic power, and the "gold cures" for the alcohol and opium habits, which contain no gold, but are sold at high enough prices to lead one to expect it. One of these "cures" for instance sold at \$1.00 per ounce consisted entirely of granulated sugar. Another, purporting to contain both gold and alkaloids, consisted only of a mixture of milk-sugar and ammonium chloride.

In Massachusetts our regular inspectors in their travels throughout the state for the purpose of collecting samples of food and drugs for examination, visit the drug stores and, as a rule acquire

the samples by actual purchase, as far as possible without arousing the suspicion of the dealer as to their official capacity.

As regards restrictive measures, in the case of both food and drug adulteration, long experience in Massachusetts has demonstrated that a judicious system of notification and publication of offenders is often far more effective than wholesale prosecution in the courts. Such notification and publication would not have the slightest effect for good unless the power to prosecute as a last resort exists, and is occasionally availed of. But with such a power judiciously held in reserve, we have repeatedly accomplished results by this means that by court measures alone would be impossible.

As a striking illustration of this, I would cite our experience with arsenic in glycerin. When in 1899 glycerin was first examined by our Board for arsenic, 68.9 per cent of the samples examined were found to be arsenical, and some of them contained arsenic in dangerous quantities. Various reputable manufacturers claimed at that time that it was impossible to produce a chemically pure glycerin free from traces of arsenic, though they were willing and anxious to make every effort to accomplish that end. In view of the fact that nearly 95 per cent of the samples examined in 1903 contained no traces of arsenic, it will be seen that the problem was capable of solution, and the constant diminution in adulteration during these five years from 69 per cent in 1899 to 5 per cent in 1903 was beyond a doubt due to the persistent efforts of our Board, following the policy of notification, and was achieved with but a single case of prosecution in the courts.

Practically the same result was accomplished also with phosphate of soda much of which was formerly contaminated with arsenic. One sample, forming the subject of a court prosecution, contained 80 parts of arsenic per 100,000. When it is remembered that one of the most common uses of this drug is as a mild laxative, being frequently mixed with milk for infant feeding, the danger arising from the presence of arsenic is apparent.

Let us hope that the day is not far distant when every state will arouse itself to the necessity of enforcing its drug as well as its food laws, for it is only by such wide spread and concerted action that we can ever hope in this age of competition to be free from the danger of impure drugs.

CHAIRMAN BAILEY: We have listened to a very interesting and instructive paper. My own judgment is that there is more fraud practiced upon the American people in the shape of patent medicines than a good many people imagine, for the reason that they contribute a large part of their resources to the public press. A few days ago I picked up one of the papers here

and it had a fine portrait of the Governor of Oregon, giving his name, who had been cured by some medicine or other. I do not know that there is a more pernicious or far reaching fraud than that of patent medicines or one that is more hard to reach for the reason that they contribute so much to the public press that it is hard to reach them that way. Mr. E. G. Kohnstamm informs me that he has the paper of Dr. Ed. Gudeman to read on the subject of "The Effect of Antiseptics and Coloring Matter on the Human System" and we will now hear from him.

#### ADDRESS OF DR. EDWARD GUDEMAN.

Mr. E. G. Kohnstamm: Owing to the unavoidable absence of Dr. Gudeman I have been delegated by my firm, H. Kohnstamm & Co., to read that part of his address relating to colors.

Gentlemen of the Convention: The difficulties in making our experiments with preservatives are small as compared with those made to determine the action of colors on the human system. While relatively large quantities of preservatives are used in these experiments, the amount of color used in food products is a great deal less.

Food products contain as small an amount as one part to five million or less. The physiological experiments generally referred to are those made by Weyl some fifteen years ago, and the few experiments made by Dr. Weber about eight years ago. Dr. Weber states that one part of color in 1,600 has strong physiological effect, retarding about 3/10 of the peptic or pancreatic digestion.

In his experiment, the single quantity of color Dr. Weber used was one part in sixteen, but he figured his ratio according to bulk due to dilution.

There is no doubt that many substances, good, bad or indifferent will re-act similarly to the few colors Dr. Weber tested, if proportion of same is 6 1/4 per cent of substance to be digested as is in this case. I don't believe that one pound of sugar with 6 1/4 per cent salt added to it would make a very palatable article, even if taken dissolved in 100 pounds of water, and it is also a fact that peptic or pancreatic artificial digestion will not be normal on any food product containing nearly six per cent of salt, vinegar, sugar or condiments, or many other substances which are not considered harmful or deleterious and on which no restrictions are placed if they are pure and true to name. On the spur of the moment, I cannot recall any published physiological test made with vegetable colors. The actual fact is the vegetable colors are to a great extent more harmful than harmless, pure synthetic colors. The result of artificial digestion tests made on some vegetable colors in comparison with synthetic

colors have shown that vegetable colors retard digestion more than the synthetic colors used in quantities to give the same shade. These tests were made for H. Kohnstamm & Co., to refute Dr. Weber's conclusion, and showed that while their yellow coal tar color retarded digestion 17 times as much as vegetable turmeric, it was 40 times stronger, or for same coloring strength, the action of turmeric in retarding digestion was  $2\frac{1}{2}$  times as great.

It is, no doubt, true that the synthetic colors are a great deal stronger than vegetable colors, and on that account a great deal less of them is required to produce the same color effect. Time is too limited to go into details with regards to comparative physiological tests. H. Kohnstamm & Co.'s standard is that a color should show no effect on respiration or digestion when taken for several days in quantities equal to  $\frac{1}{2}$  grammes a day for a grown person.

Colors should be divided into two classes, the harmful color and the harmless color, and if this division is made according to physiological tests or artificial digestion tests, it will be found that many synthetic colors, such as represented by the Atlas brand, H. Kohnstamm & Co. have less physiological effect than an equal or even smaller amount of many vegetable colors. *\*Chemical analysis will, in many cases, not distinguish between vegetable and synthetic colors*, and in some cases the resemblance is so close, that it is only by determining foreign impurities in vegetable coloring that same can be designated as such color, and it is possible by making an impure synthetic color using the vegetable impurities, to have same meet all requirements of a vegetable color when relying only on chemical determinations or analysis. When other tests, such as dyeing properties, are used, it is easy to differentiate between some of the colors, and the strongest agitation against the synthetic is due to the fact that the food chemist cannot determine whether colors used in food products belong to the class of harmless or injurious, and to cover up this inability, he prefers to condemn the whole class of colors, and at the same time permits other colors, animal, vegetable or mineral to be used that are as active and in many cases much more active than the small amount of harmless synthetic colors. The argument that by means of synthetic colors, it is possible to palm off poor stuff for good stuff holds just as well for vegetable or other colors.

Manufacturers use the colors by compulsion to gratify the aesthetic tastes of the consumers and they try to use just as little as possible.

It is just as easy to control food colors as it is to enforce the requirements in regard to fertilizers or feed stuffs or alcohol or importation of

foreign products. If, instead of condemning and legislating and ruling against coal tar or aniline colors, you would favor and recommend the use of the harmless, non-poisonous, synthetic colors, you would quickly drive harmful colorings out of the market, but in doing so some of the vegetable colors, whose use is now permissible, would have to disappear in food products. Vegetable or non-synthetic colors are often adulterated, and you will find it stated by Mr. Kebler, chief of drug laboratory in Dr. Wiley's department, that he has found druggists to pick out impure cochineal and when their attention was called to it excuse themselves with the statement that they had never seen the pure article.

Dr. Wiley is on record as being adverse to the pure, harmless synthetic colors as compared with vegetable colors, and bases this on the fact that vegetable colorings are extracted from vegetables and therefore even have a food value. I do not believe that Dr. Wiley, or any other food chemist, would care to undertake to determine the difference in food value of the same product, one pound of which contains one-fourth grain or less per pound of synthetic color, and the other containing same amount of vegetable coloring.

The action of colors in bulk is radically different from same amount of color when intimately mixed with a food product. Some physiological tests made by myself, have shown that five grains of a harmless synthetic color when taken as a single dose, will show coloration within 3 to 5 hours in the urine, while the same amount of color diffused in food consumed does not show discoloration in the urine at all. The same experiments, increasing the color to 15 grains, showed coloration in the urine inside of five hours, when taken in bulk and only very slight coloration after about ten hours for a period of about 36 hours when color was intimately mixed with food taken at one meal. These experiments allow me to draw the conclusion that there is a difference in the physiological effect when taken in broken doses, if I may so designate it. The difference in these experiments was just in the manner in which the color was introduced into the stomach, the difference of time being not more than one-half to three-quarters of an hour. From these experiments and others made, mainly on animals, I have come to the conclusion that it is not at all conclusive to judge the physiological action of a color when introducing same into the system in bulk, as under these conditions mass reaction must be taken into consideration, and what allowance to make for this I do not know. It has convinced me absolutely that if a harmless, synthetic color is introduced into the system in amount of five to one hundred times greater than could ever be introduced with consumption of all food articles consumed in the course of a week,

\*Arata Test.

and if this excessive quantity introduced in bulk as a single dose has no deleterious effect, that such a color can be considered as absolutely harmless.

When such physiological tests are actually made on food colors that are offered in the market, there certainly is no reason to condemn them simply because they are synthetic colors. When a concern is willing and offers to submit for such tests any and all of their food colors to all parties with authority as to the use of such colors, commissioners, health authorities or chemists, it is no more than fair to test these colors instead of legislating against them, and to allow and favor and recommend another class of colors that will not stand such practical tests, chemically and physiologically considered.

Food chemists have absolutely no foundation on which to stand when they condemn a harmless synthetic color, and the only excuse they can make is that they are not able to distinguish between a harmful color and a harmless color in food products, and on that account they condemn these colors absolutely and use such condemnation as a cloak to cover their inability to differentiate between the good and the bad.

Apropos to this paper just read to you we wish to call your attention to the official test called the Arata, which is used to show the presence or absence of coal tar colors in fruits and wines.

Recently we tried to put on the market a vegetable Archil color to satisfy the demands for such a color in certain states, owing to official objections to coal tar colors. We are compelled to withdraw the article pending a modification of the Arata test, as our customers returned it to us saying that this test showed it to be a coal tar color. This was very disagreeable to us for several reasons, but principally because we were put in the awkward position of perpetrating a fraud, without being able to make a proper defense. We have had considerable correspondence with Dr. Frear on the subject—who has been very courteous—and he gives us to understand that the test has considerable value as it shows artificial coloring. "That the committee of which he is chairman is not charged with the study of methods of analysis—that the Association of Official Chemists has a referee with a number of associations to whom analytical problems relating to food substances are referred. No such officer possesses, however, the authority to reverse an action of the association so that the question must eventually be presented to the latter for action."

It would appear from this that a test which is conclusively proven to be wrong may still remain "official" for a long period. We protest that this is both unjust and unscientific, and ask that action be taken immediately to correct the error.

We have before stated to a committee of this

association that we have no desire to pass an opinion on the question as to whether or not colors should be used in foods where there is a possibility of their being used to hide a damage or to cover inferiority or to make an article appear to be different from what it is. But we know that certain coal tar colors are non-injurious and non-poisonous. They cannot reasonably, and should not be, condemned as a class for purposes where the association decides coloring permissible.

MR. CRITCHFIELD: I have a resolution I wish to offer, which I want to read:

"Whereas, charges have been made by certain business men of New York and Baltimore, supported by their affidavits, reflecting upon this organization and especially upon certain persons claiming to be connected with it as its representatives; and

"Whereas, the usefulness of the association depends upon the strict integrity of its conduct and the measure of public confidence it enjoys; therefore

"Resolved, that a committee of five be appointed to investigate said charges, and that said committee be instructed to make a full report of its findings at the next regular meeting."

I move the adoption of this resolution.

MR. SHERWOOD: I second the motion.

CHAIRMAN BAILEY: I will call attention to the fact that there is a by-law stating that all resolutions shall be referred to the Committee on Resolutions, and it will be referred to that committee.

MR. WHITTAKER: It was my privilege a number of years ago to be one of the organizers of this association of Dairy and Food Commissioners of the United States and to work in the association for a number of years. My change of official position took me out of the association and into other work, and it is therefore a matter of extreme gratification that I am able to be with you to-day as chairman of a committee of the Farmers' National Congress now in session in this city to bring you the fraternal greetings of that organization and to assure you of the hearty co-operation and support of the Farmers' National Congress in all legitimate measures which will tend to increase the purity of the food products of this country and to encourage honesty and fair dealing in traffic in the same.

MR. BIGLOW: I would like to say in regard to the Arata test, that it is not and never has been the official test, but a provisional method, for the Association of Agricultural Chemists. The Arata test has been used by some for certain classes of foods. The provisional method of the Association of Official

Agricultural Chemists is the method known as the \*— test, which includes, and in half of the method is practically the same as the Arata test. The latter part of the test, which involves the solution in the fast dyeing of the fabric, has not given incorrect results with any colors that have come within the observation of the food chemists. If there are colors that are likely to lead to error, I would like to have samples of them and I can assure you that the changes in the method will be recommended to the association immediately and I have no doubt will be changed.

I may say also that Dr. Frear called attention to this matter at the meeting of the Association of Official Agricultural Chemists the other day.

MR. PIERCE: I have a communication from Frederic W. Taylor, Chief of the Departments of Agriculture and Horticulture, which I would like to read.

"The progress of agriculture is the most marvelous feature of the national growth and development. Its condition at the close of the nineteenth century in this country was the marvel and admiration of the whole world. Recognizing this, and the wide influence of the National Association of State Dairy and Food Departments and the work it has done in promoting a most important branch of this science and in stimulating a greater popular interest in its study and practice, the members of the association are cordially invited to visit the Palaces of Agriculture and Horticulture, wherein are housed the most complete and comprehensive displays of the products of scientific husbandry ever brought together in this or any other country, including a most valuable exhibit of the National Association of State Dairy and Food Departments, installed by your secretary, Mr. Allen.

"In the annals of human progress there is nothing comparable to the story of the development of husbandry in this country and no pains will be spared to make your visit mutually pleasant, instructive and profitable. It is hoped that a large number will avail themselves of this opportunity to inspect what we believe to be one of the most interesting exhibits of the World's Fair.

"FREDERIC W. TAYLOR,

"Chief Departments of Agriculture and Horticulture."

On motion of Mr. Jones the invitation was accepted.

CHAIRMAN BAILEY: I will now call on Mr. L. F. Kebler, Chief Drug Laboratory, United States Department of Agriculture, who is down for a discussion on the subject of "The Adulteration of Drugs."

\*Reporter failed to get name.

## DISCUSSION ON THE ADULTERATION OF DRUGS, AND FRAUDULENT METHODS.

L. F. KEBLER,

Chief Drug Laboratory, Bureau of Chemistry, U. S. Department of Agriculture.

Mr. President, Ladies and Gentlemen:

On looking over the program of this Congress I was quite surprised to find that I was expected to take part in its discussions. From the name of the congress one would hardly expect that the subject of drugs would be treated, but this is not to be wondered at because it is a conspicuous fact that very little attention has been paid to the subject of drugs by the various bodies organized for the purpose of preserving the public health. However, it gives me great pleasure to have the privilege and opportunity of saying a few words on the adulteration of drugs. Dr. Leach has clearly pointed out the close relation that exists between foods and drugs, and I will not dwell on that phase of the subject any further.

In an address delivered by Dr. Wiley last night he informed us that "It would be impossible for any one to dictate to others as to what they should eat." Every one can do in this matter as he deems proper, but in the case of drugs this does not hold. The patient is expected to take the medicine given him by the physician, be the material good, bad or indifferent. The healthy individual will not be very materially affected if the food he eats is slightly diluted, because if the body requires more nourishment it is manifested in various ways. On the other hand, there is nothing in the animal organism that will indicate to the sufferer whether or not the amount of medicine he is receiving is giving him the proper relief. Frequently the sufferer must lie for days before any improvement can be expected, and if no dependence can be placed in the quality of medicine used by the physician, there is frequently little hope of recovery.

It is often stated that the men making analyses of medicines are not experienced in a practical way so as to enable them to detect adulterations and make fair and proper deductions. Personally I have had an experience of over ten years in one of the largest manufacturing and analytical laboratories in this country, where we manufactured not only the medicine derived from plants and animal sources, but also a large list of chemicals used as medicinal agents. Before engaging in the manufacture of any chemical it was the custom to purchase on the open market various brands of the chemical under consideration in order to determine their purity and ascertain what degree of purity would be necessary to meet competition. When it is called to mind that the speaker started and continued the manufacture of not less than 300 chemicals and assisted in the making of about 1,500 analyses per year, it can

readily be seen that the practical side is not wanting.

The statement is frequently made that honest goods will not succeed. If we have really reached this condition of affairs it is most deplorable, but I do not believe this is correct. As a matter of fact, it would only be necessary for us to look about and determine for ourselves that honest dealers in every line are among the foremost and best citizens in our country. When a dealer starts out on the principle of satisfying his customers or refunding their money, there is no object in deluding those who come to him for goods. As a conspicuous example in the drug line, it is only necessary to cite the late and honored Dr. E. R. Squibb.

The relation existing between manufacturers, jobbers and chemists should be most harmonious. It is, however, well known that the chemist often occupies a very ordinary or menial position, and his advice is taken *cum grano salis*. Men are frequently employed in the capacity of chemists who are poorly paid and who are not capable of properly performing the work which is entrusted to them. A so-called chemist recently presented himself at the Bureau of Chemistry because certain goods delivered by his firm had been rejected and he informed me that their examinations of chemicals were very crude and he made all such examinations. In the course of our conversation it developed that this chemist was unable to properly apply a test for the chlorids. What can be expected from such men? Where is the fault?

A chemist frequently has many difficulties to overcome with the various heads of firms. It is often a matter of dollars and cents, and if the chemist continually rejects the goods which are delivered, these business men believe their business will be ruined if they rely solely on the reports of the chemists. Personally I have had these experiences and the managers of the firm I was connected with were frequently very much annoyed because I reported adversely on some of their goods. Our discussions at times became very animated and unless I was in a position to show good cause and drive it home both legally and morally why the goods in question should not be accepted, the article would be purchased, because other dealers in the same business handle the same grade or cheaper grades and it was necessary to do so from a commercial point of view. The above conditions must be met by setting fair, equitable standards and educate the public and dealer by such means as may be necessary and proper. It is absolutely necessary that chemists fortify themselves in every respect in order to meet the contingencies that may arise. They should remember that considerable money is at times involved and other chemists' reports may be in evidence. Sometimes bogus analyses are sub-

mitted as evidence to show that the chemist's report is incorrect.

Manufacturers and jobbers are frequently not well informed relative to the quality of the goods they handle and the methods employed in their manufacture, and often when complaints are received they inform the complainant that the goods were supposed to be of such and such a quality and that they (the jobbers) did not know that the goods were as found by the complainant. Of course it is impossible for all manufacturers and jobbers to be conversant with every detail of manufacture and to a minutia the quality of the goods they handle, but they ought so to arrange matters as to be able to get the proper information when the occasion requires. The quality of the goods handled by any manufacturer ought not to be an unknown quantity to those who have the matter in charge.

The manufacturing processes are usually known only to the chemists, if there are any, or to the workmen who make the goods and if the chemist or the workmen or both combined are inclined to misrepresent things, it is very difficult for the manufacturer in any way to get at the exact condition of affairs, and frequently manufacturers place responsibilities on workmen which they are entirely unqualified to properly discharge.

In an address delivered yesterday by a manufacturer we were told that they were opposed to the pure food and drug bill because it was impracticable, but the impracticability was not pointed out. The manufacturer in question is a dealer in drugs and medicines and presumably he referred more particularly to the drug end of the bill. He, in common with many others, is of the opinion that the present United States Pharmacopoeia is unreasonable in many respects. I fully agree with him that the U. S. Pharmacopoeia has its faults, as every other book has. It is a product of men, and there are only a few who are infallible. In a number of chemicals the U. S. Pharmacopoeia requires a purity of 100 per cent. Those of us who are familiar with the manufacture of chemicals know that such a purity is very seldom attained and it seems therefore impracticable. There are other reasons set forth by manufacturers for claiming that the U. S. Pharmacopoeia is impracticable: for example, it is stated at times that the manufacture of the tincture of opium by first exhausting the drug with water, evaporating to the proper degree of concentration, then adding the requisite quantity of alcohol, filtering and adjusting the strength of the product according to the method of the U. S. Pharmacopoeia, ought to be just as legitimate as the present method contained in this book. The former is certainly more economical, but whether it produces a tincture of the same quality remains to be determined. Questions of a similar char-

acter are continually arising. It is, however, unreasonable to expect that sodium benzoate, which is largely used as a preservative, should be absolutely free from chlorids. We are informed that the forthcoming Pharmacopoeia is to be more lenient in these directions. There certainly cannot be any objection urged against the presence of small quantities of chlorids, such as are constantly present in chemicals, and most difficult and expensive to remove, which cannot in any way influence the action of the chemical medicinally, but poisonous agents like arsenic and antimony should be most rigidly excluded from all medicinal agents because when these are present we have no knowledge as to their effect on human economy and, above all, sick persons should never be burdened with more foreign material than is absolutely necessary.

Several years ago I stated in a communication to one of the drug journals that adulterations in the drug line, from a wholesale point of view, do not exceed 5 per cent, but we are frequently informed by analysts that the drugs examined were adulterated and of inferior quality to the extent of from 50 to 75 per cent. I am very well aware that there is a large amount of adulteration practiced between the wholesale end of the drug business and the consumer, but I refuse to believe that nearly one-half of the medicines sold by druggists are adulterated or of inferior quality. There are certain conventional adulterations which are expected by the public. For example, certain coloring agents are recognized as useful by eminent authorities and must be used in order to give well-known remedies the desired physical appearance in order to avoid friction. The coloring agent itself may be valueless therapeutically, but consumers and patients usually labor under the delusion that the more highly colored a product is the stronger and better suited it must be for medicinal purposes. The almost universal custom of coloring butter referred to on the floor of this congress fully sets forth this problem. Ignorance of this character can only be eradicated by long continued education.

It was stated here yesterday that saccharin was not used in a fraudulent way. As to whether this is correct or not I will cite an incident: A sample of a medicinal agent called "aquamiel" was received, and on examination proved to consist of 97.5 per cent of water, 2 per cent of alcohol, 1½ per cent of non-volatile matter, which contained a small amount of sugar. This solution was colored with caramel and sweetened with saccharin. It was claimed that the product was prepared from a plant grown in Mexico. No chemist would have any trouble in preparing the same product in the poorest equipped laboratory in the country. The sole purpose of the saccharin in this case was for deception. The mixture was a fraud from

almost every point of view. It was claimed for this product that it was a most excellent agent to stimulate the growth of certain organic tissues.

Another product brought to my attention was called "Vital Fluid." An investigation showed that it was similar to our ordinary cold cream, but flavored with oil of wintergreen instead of oil of rose. It was claimed for this article that it was largely used by the leading physicians of Europe, but it was found that this was a misrepresentation through and through, as the article had never been used outside of a certain firm, which had it compounded for its special use.

Another product which is having a large sale in the United States at present consists virtually of sulphur dioxide dissolved in water. Sulphur dioxide or sulphurous acid undoubtedly has its value as a medicinal agent, but to make the extraordinary claims which are found in the literature accompanying the material is fraudulent.

I hold in my hands a piece of mineral for which Uncle Sam paid \$5.00. It was put on the market by the Radiumite Company, no longer in existence, under the name of radiumite. It will be quite readily seen that the term radium was drawn on simply because during the past few years it has received some recognition as a possibly valuable medicinal agent. On examination it was found that this mineral did not contain a trace of radium, but is what is known as pyrophosphorescence; that is, it will present some luminosity when friction is brought to bear upon it in the dark. It is a mineral consisting of zinc sulphid and lead sulphid with some associated products. It is very abundant in the state of Missouri.

Another fraud perpetrated on the public is the distribution of methylene blue pills with directions to observe the nature of the urine voided, and "if the urine becomes colored, send the colored urine." The urine invariably will be colored green; it does not make any difference what condition of health the patient may be in. To void green urine, by any one not acquainted with the action of medicine, is enough to frighten him into the belief that his last days are at hand and every effort will be made to be restored to health. He naturally believes that the party who can show up his diseased condition in such a wonderful manner is the most competent to successfully restore him. Some of the men doing business of the above character are reported as being upright, noble citizens in the community they live in, and in their advertising literature represent themselves as divine messengers sent by Providence for the restoration of lost manhood, lost vitality, et cetera, but at heart they must be hypocrites and frauds of the worst kind. They are robbing the ignorant of their hard-earned money. Men doing business of the above character are not

druggists in any sense of the word and it would be manifestly unjust to class them as such.

The tendency prevailing at this meeting seems to be for the manufacturers, the boards of health and the various food commissions of the country to get together. This is greatly to be desired. It has been my experience that reputable manufacturers are not the set of rascals they are frequently pointed out to be. There is here and there one who needs a little watching, but the vast majority of them are honest men and are ever ready and willing to adjust their business and improve their goods in such a manner as to conform to the laws of the land. It is unfair to treat them unjustly along lines they are not thoroughly conversant with. I am of the opinion that if their shortcomings are pointed out to them they will most heartily respond. I thank you for your kind attention.

A recess was then taken until 1:30 o'clock of the same day.

Thursday, September 29th.

Congress met pursuant to adjournment at 1:30 p. m.

SECRETARY ALLEN: Mr. President, before we begin, I move that the discussion on the subject of baking powders be made a special order of business for three o'clock this afternoon.

Which motion was duly seconded and carried.

CHAIRMAN BAILEY: The first thing on the program this afternoon is a paper by Professor Scovell, of Kentucky, and without any further remarks I take pleasure in introducing him.

ADDRESS OF PROF. M. A. SCOVELL.

#### FOOD STANDARDS.

Prof. Scovell: Mr. Chairman and Gentlemen, I am down on the program for an address on "Food Standards." This, of course, is one of the most important subjects before the convention, or rather, I might say, food standards are almost absolutely necessary in order to enforce the pure food laws. It is one of the most difficult things to establish, and a standard that is established on a true definition and on absolutely correct data is a standard that we should consider only. A standard that might be taken on assumption or on data that cannot be corroborated would be ill-advised, and if we adopted a set of standards that had not been thoroughly digested, both by the trade, the chemists and the commissioners, we should come up against things that we would have to reconsider, and the whole thing would be worse than no standard at all. The official agricultural chemists appointed a committee in 1897 to take up this work. This committee has been working since

that time, and I represent this committee today. Unfortunately Dr. Frear, the chairman of the committee, is not with us, but Dr. Wiley, if he gets here in time, has promised to assist me, being another member of the committee; Prof. Weber is another, and Dr. Jenkins is still another. This committee has been appointed by the Secretary of Agriculture under authority of Congress, as a committee on food standards to guide him in his work. This committee has been at work since 1897 and has collected a great amount of data to base standards upon. It has not only collected this data, but it has brought the manufacturers and those interested before it in order to consider all phases of the question. Very often we thought we had a definition or a standard that would be perfect, and yet when we would hear a manufacturer we would find that we had left out something, or that we did not understand the exact way that the product was manufactured. We have tried to give the definitions according to the general term as it is known in this country, but we have not always done so for the reason that it might conflict with other well-known definitions, and we want a definition which will be general throughout.

#### FOOD STANDARDS.

Any one who has had experience in the enforcement of pure food laws readily understands the necessity for food standards. They are as essential for the interpretation of food analysis and for the guidance of the food commissioner as the alphabet is to language or the multiplication table to mathematics, or as self-evident truths in the demonstration of geometrical problems. The chemist may analyze a sample of milk and find it to contain 2 per cent fat and 11 per cent of total solids, but how does he know from the results whether the milk has been watered or skimmed or adulterated in any other way? He must go back of his results and study and compile milk analyses heretofore made and, in doing so, what does he find? First, that some breeds of cattle produce milk rich in fat content while others have a small percentage of fat in their milk; second, that the milk in the individual cow in the same breed varies in fat from 1 per cent to 8 per cent; third, that the period of lactation has its influence upon the fat content; fourth, that the top milk is much poorer than the last taken from the udder; and lastly, other conditions tend to vary the fat and solids in milk—such as when the cows are first turned out to pasture in the spring, when they are unduly excited, when they are in a feverish condition, when they are overheated or walked several miles, or when they have traveled a long distance by railroad, et cetera.

It is evident that if he takes the minimum results in butter fat as evidence of purity in the sample above mentioned, he must call pure milk,

whereas it may have been deprived of much of its fat. It may be also pure top milk or it may be milk of a certain breed of cattle or of the individual milk of a cow of any breed. As the average of American herds is much above 2 per cent in fat and above 11 per cent in total solids, it is at once seen that some standard should be adopted to guide the chemist and commissioner in the pure food work. The first essential to a standard is a all healthy cows whether it contains only a small definition. If we define milk as the lacteal secretion obtained by the complete milking of one or more healthy cows properly fed and kept, excluding that obtained within fifteen days before and five days after calving, we pave the way for a standard. The definition excludes top milk and colostrum. It excludes abnormal milk from poorly fed and unhealthy cows, but includes the milk of amount or a large percentage of fat and solids. It is evident that a standard is needed for it is manifestly unjust to call the extreme minimum fat and solids found in the milk of a healthy cow normal milk.

What is true of milk is true of most of our food products. If we define butter as the product obtained by gathering in any manner the fat of fresh or ripened milk or cream into a mass, which also contains a small portion of the other milk constituents with or without salt, we must have a standard for butter, otherwise, there could be incorporated as much as 45 per cent of water and still according to the definition, it would be pure butter; so with syrups, molasses, sugars and honeys; so with vinegars, jellies and preserves. If the definition alone be the standard for preserves, for instance, one manufacturer may use 50 per cent of fruit and 50 per cent of sugar, another 20 per cent of fruit and 80 per cent of sugar, it is evident that a standard should be adopted giving the amount of fruit in standard preserves.

From these few illustrations the magnitude of the work for preparing standards which are based upon the results often of hundreds of analyses and data representing materials produced under various conditions and manufactured by various processes, can readily be seen.

The committee appointed by the Association of Official Agricultural Chemists of the United States on Food Standards in 1897 and commissioned by the Secretary of Agriculture and under authority of Congress to establish standards of purity for food products and to determine what are regarded as adulterations therein for the guidance of the officials of the various states and of the courts of justice, have proceeded in the lines indicated above. At the very outset the committee began the collection of data on which to base standards. Dr. Charles D. Woods, director of the Maine Agricultural Experiment Station, was appointed referee on meat and its products; Dr. L. L. Van

Slyke, chemist of the New York Agricultural Experiment Station, referee on milk and its products; Dr. Charles A. Crampton, chemist of the Bureau of Internal Revenue, referee on beverages, including cocoa and cocoa products; Dr. A. L. Winton, chemist of the Connecticut Agricultural Experiment Station, referee on condiments. These gentlemen assisted the committee in collecting the data. On milk alone hundreds of analyses were collected. The data were obtained from the herds of the various experiment stations. Milk shipped for the various marts, from individual cows of the various breeds and the results of the Columbian dairy tests were carefully studied. As I have stated before, the results showed that some cows in apparent health gave less than 3 per cent fat in milk, but the number giving such low results was so small that such milk ought to be considered as abnormal. The results show that the great majority of American cows give over 4 per cent of fat. The few cows that give such abnormally low percentage of fat are detrimental to the American herds and should be "weeded out."

A standard should be higher or lower than the extreme. It should be such that tends to better conditions and not to lower them. After fixing a provisional standard for milk the committee sent it to the trade and asked for suggestions. After twice sending it out, it fixed the standard for milk as follows: "Standard milk is milk containing not less than 12 per cent of total solids and not less than  $8\frac{1}{2}$  per cent of solids not fat and not less than  $3\frac{1}{4}$  per cent of milk fat.

So, likewise, it took up every subject in detail. A butter standard of  $82\frac{1}{2}$  per cent of fat was fixed after reviewing many hundreds of analyses of butter taken from the market and from the churn as soon as made. The results showed that some butters contain less than 80 per cent of fat when freshly made and that some butters scored high. Still the number of such butters was so small as compared with the great number above  $82\frac{1}{2}$  per cent of fat that it is but just to consider those below as abnormal.

The committee generally has had two meetings a year. The last meeting was in New York City and five days were given to hearings of manufacturers, importers, et cetera. On the subject of vinegars, fruit extracts, fruit juices, preservatives, coloring matters, and malt liquors, the manufacturers have been before the committee twice and the committee has had rare opportunities to hear in detail the operations and processes in the manufacture and preservation of food products. It has already presented to the Secretary of Agriculture a number of definitions and standards and it has heard evidence on most of the other topics and is collecting data from all known resources. It hopes soon to be able to complete the schedule as already laid out.

Now syrup, as you well know, is the concentrated juice of the cane or other saccharine substances, and under its general term in the sugar house it is also a molasses; they call it sugar house syrup," and when this committee determined that molasses, as it were, a skim milk syrup—that is, some of the sugar had been taken out—the American Sugar Refining Company came with a committee and asked that the sugar house syrup be put in syrup and not in molasses. If you will notice the resolution that has been adopted, this was not done by the committee, because they held the broad view that molasses had some of the sugar taken out, so it is defined under molasses and not under sugar. I give this as an indication of what difficulties we have had in defining these things and the trouble we have gone to in order to get correct definitions and trying to get them so that when the standard is once adopted it will be adopted for all time. The work of this committee has been slow, and necessarily so. Last spring we went to New York on purpose to meet the manufacturers and others interested and held daily sessions there for five days, I think, and held them from 8 o'clock in the morning until 6 at night. We heard questions on preservatives and worked on coloring, getting the manufacturers' side of the question and just how they were manufacturing. We have also taken up the subject of cocoa and chocolate, and we have established standards on that point after going into the subject very thoroughly.

Now there are some very amusing things in connection with this. For instance, in the matter of preservatives and coloring matter we have heard some very interesting stories, and I am going to tell one on account of its interest. Of course, different manufacturers think their preservative is the best, and that it is non-injurious to some extent. I will say in general that the manufacturers have been very cordial and have shown the committee everything, as it were, from the top to the bottom of the processes of manufacture. One chemist said that they had discovered or found out that a certain coloring matter was non-injurious, and that it was a preservative in the dark but not in the light, therefore that salicylic acid, benzoic acid and those things would not stop the digestion in the stomach, but this color was taken because the moment the coloring matter was taken in the stomach it was in the dark and therefore it stopped its work. That is one of the illustrations they give.

In order to show exactly what this committee has been doing, I will say that the Secretary of Agriculture has already adopted some of the standards of the committee, and you will find them in the report of this association. They will meet again this fall and will take up the subject and probably adopt some of these. Such as vinegar, and

the probabilities are that they will take up again preservatives and coloring matters and honey and some of the things that have not already been taken up. We have had a great deal of work on preservatives and coloring matter so far. After this committee has adopted a preliminary standard, as it were, or definition, they send it out, not only to the chemists but to the trade generally and to the commissioners, and ask criticisms upon it, and we have never found yet that we were correct. There is always some criticism, and generally some very pertinent and very good criticism that gives the committee an opportunity to make the definition so much the better; so if the work of this committee is not fast it must be remembered that it takes a great deal of time to do this work and make it thorough, and that it is the intention of the committee that whatever it puts out will be a standard.

Now for instance, we cannot take the analyses generally of substances which we gather in the markets. The food chemist usually, when he has analyzed a sample and it does not appear to him to be adulterated, says "not found adulterated;" he does not say it is pure. We cannot take that analysis to find a pure food standard. Take honey, for instance; we cannot take honey that is on the market and analyze it and call it pure. We must trace that honey to the hive, and not only that, but we must trace it under certain conditions, when the bees gather honey from flowers, when they gather it from fruit, and you might say, as they sometimes do, from the honey dew on the leaves; and we find that honey varies in composition, even from the same bees, and from different bees it varies also. Now the committee has to base their results upon these absolutely traceable samples, and they find thousands of analyses of chemists who get their samples out upon the markets. The milk samples have been gathered the same way, as well as butter samples and other samples, to establish a standard.

Let me take one subject, and that is the fruit analysis. When we first sent out our conclusions as to fruit standard, all the manufacturers, or nearly all of them, stated that they could not be made without preservatives. At our last meeting in New York, many of them showed samples that had been made without preservatives and they are making them now without preservatives, and they can be made and should be made, the manufacturers said, without putting any preservatives in. The manufacturers stated that themselves. Two or three years ago they said they could not be made; now they say they can be made.

Now Mr. President, it has been my honor also to be chairman of the committee from this association, but it is manifest the association cannot

afford to get the committee together and make out these observations like this committee that is already appointed, so the chairman has not called the committee together so far. There are but few of the chemists here, but we will call the committee together and see what can be done.

CHAIRMAN BAILEY: We will now listen to an address by Dr. E. N. Eaton, Illinois State Analyst, on "Uniform Standards for State and National Departments."

#### ADDRESS OF DR. E. N. EATON.

Mr. Chairman and Gentlemen:

The subject assigned me was not of my own choosing, and I will say that I am not familiar with the requirements of the national government in relation to the standards they have laid down for food in carrying out their work. I listened to the admirable address of Dr. Wiley of the United States Department of Agriculture as he outlined the work the national departments were doing in food matters. From that I gather that they are doing work in two departments, the Treasury Department and the Department of Agriculture, the Treasury Department and Bureau of Internal Revenue being confined mostly to meats and to butter, and the Agricultural Department to the suppression of fraud in food stuffs. I presume that the standards that they will need will bear some relation to the laws governing the work in those departments.

While I am unfamiliar with the work of the national government and the needs of the national government, I am quite familiar with the needs of the state food departments in their line of work, and it is upon that subject that I wish to address you, the kind of standards required in the state food departments. I agree with Professor Scovell that it would be very desirable if we could create a set of standards that would be perfect for all time and which would be as fixed as the stars, but I don't believe a set of standards of that kind is practicable. Standards are man-made, not God-made, and every human being is likely to make a mistake. And so I believe that the standards will need to be revised from year to year in order to keep pace with the progress of mankind. This has been recognized as true by every commission that has tried to fix standards. That is in fact what they have done in constructing the United States Pharmacopoeia, a committee to revise which meets once in ten years, so that we have in fact a new pharmacopoeia every ten years.

#### STATE FOOD STANDARDS.

The commissioners and chemists of the state food departments have devoted much time and thought to the consideration of food standards in the abstract. They have advocated the desirabil-

ity of fixed standards which should be uniform in the several states. As many states possessed laws specifically defining foodstuffs or, in lieu thereof, rulings regulating the quality of food stuffs, the discussion has sometimes been under the head of Uniform Laws and Rulings.

However, we have outgrown that stage of the controversy and must consider food standards in the concrete. We must designate the kind and quality of standards we want. That is to say, the liberality or the strictness, the simplicity or the thoroughness, the flexibility or the fixity of the standards as well as the truthfulness, conciseness and general utility of definitions.

In order to intelligently discuss these points, it is absolutely necessary to understand what the standards are for, by whom and in what manner they are to be used and their relation to legal standards, trade customs and laboratory facilities for enforcing them.

And here I wish to emphasize that I speak of standards strictly from the standpoint of state food departments and their work. The State Food Commission is a peculiarly American institution. It has no counterpart in this or in any other country nor is its work undertaken by any other branch of our state or national government.

However, different states have very different laws and employ very different methods of arriving at the same result. Some have general food laws, leaving the burden of establishing quality entirely with the food department. Other states have specific laws in which standards of quality and purity are incorporated into the law itself. Several states combine the two systems.

In the matter of enforcement of law or of attaining the object of the law, namely: to free the markets from impure and unwholesome food, some commissioners rely entirely upon prosecution of offenders, others try publicity and moral suasion. Perhaps the greater number combine the influence of punishment and the publication of annual or monthly reports.

All this, while familiar to members of state food departments, may not be so well understood by those engaged in other branches of food work, and has an important bearing on the kind of standards desired by the state food departments.

It is evident that these standards must be standards that will not conflict with the food laws of the several states and be as harmonious as possible with the rulings of the various food commissioners.

It is evident that these standards must be such as will be serviceable in court under cross examination and not alone such as will convince a chemist of the character of a sample.

It is evident that the standards must be such as will meet the needs of those food departments:

which have been long established and which have thoroughly equipped laboratories and a large force of chemists, and fulfill the requirements also of those food departments which are not so generously equipped.

As a corollary to this the standards must be serviceable in the state where the percentage of adulteration is small and in those states where the commissioners are compelled to police a large district filled with grossly adulterated food.

With this utility in mind, I suggest some principles not to be lost sight of in selecting standards.

First. A systematic, logical and natural classification of food stuffs under orders, genera, species and variety.

Second. A definition and a standard where possible of every distinct variety of food or drink or articles used in the preparation of food or drink in the human dietary, including of course compounds and mixtures of definite composition.

Third. The individual standards should be as liberal as any law. Only by this plan can all the states adopt a set of standards as it is absolutely impossible for a state to enforce a ruling, requiring a higher standard of excellence than the law recognizes.

Fourth. The standards to be of service to the commissioner, the consumer and the grocer should be considered from two standpoints—the common and the chemical. By the common standard is meant those qualities recognized by organoleptic means or by those means familiar to the layman. By the chemical standard is meant such qualities as are recognized by chemical analysis.

The chemical properties of food are always numerous and grow with the discovery of new methods and processes. For many purposes it is advisable that the chemist ascertain every fact in relation to a food product of questionable purity. In such instances the most thorough standards are desirable.

For other purposes a much less exhaustive analysis will enable the chemist to classify the products as pure or adulterated and indicate if adulterated the nature of the adulteration. In these instances a single standard may answer much better than compound standards requiring tedious and time consuming analyses, and especially is this true when analyses and standards are to be supported in court. A compromise would probably be worse than a single or compound standard.

A better procedure would be to recommend two standards, a complete and abridged or what would be in effect the same, to give the comprehensive standards and then name the determinations usually sufficient to enable the chemist to decide on the purity of the sample or on the kind and amount of adulteration.

One of the strongest and in fact an indispensable

feature in a set of standards for state food commission purposes, is the manner of representation to the consumer. The label is getting to be the most important factor in food control work. The label may legalize substitutes, mixtures and compounds and even in many states the employment of artificial color and preservatives. The label enables the purchaser to inspect the source of a sample to place responsibility for its existence—to, in a measure, be enabled to trace its history.

In goods chiefly valued for locality of production the label should be relied upon to give truthful statements, and in the case of imported goods, especially in which so much fraud exists, the label should bear evidence of the integrity of the goods. Certainly the label should not be overlooked in suggesting standards suitable for food control work.

These, then, are the broad principles to be observed in constructing standards. It now remains to formulate definitions which should be concise and correct and standards which while conforming to the laws of chemistry will also serve as a protection to manufacturers, middlemen and public. All whose interests are involved should have a voice in fixing food standards.

The state food departments may be relied upon to protect the public. The chemists will see that their interests are consulted but even the food chemist, although daily coming in contact with market commodities cannot thoroughly appreciate the position of the manufacturer.

The manufacturer makes and markets goods in competition with the world. He does not always create but always endeavors to supply public wants and with material nature and man can supply. He buys from every land, from every tribe, civilized and savage. He cannot always obtain hand-picked specimens and if he could the public would not willingly pay the increased cost which such goods must command. In their own good time it is probable that the grocer like the druggist will, in conjunction with health officers, convene to form an association analogous to the U. S. Pharmaceutical convention and issue an authoritative guidance to the trade and to the public, perhaps somewhat on lines suggested by me in various papers before this association. Until such convention is called, and in this movement the manufacturers should take the initiative, the trade interests must be looked after by the food commissioners with what aid individual manufacturers, jobbers and merchants can give.

CHAIRMAN BAILEY: The next paper will be by Mr. R. G. Evans, of the Heinz Company. Mr. Evans has been with us continually, and is very much interested in the work we are doing.

MR. EVANS: Mr. President, and Gentlemen of the Convention—My paper is on the subject of Food Standards.

## ADDRESS OF MR. R. G. EVANS.

## FOOD STANDARDS.

Simplicity characteristic of primitive life and pioneer days. This was particularly true with respect to the food supply. The old New England ideal of "plain living and high thinking" was enforced, perhaps more by stern necessity than by free choice or natural inclination, and in no way were the old New Englanders more restricted than in the food they consumed; which, while ample in quantity—even abundant, was in comparison with the living of to-day, limited in variety.

In olden days the important factor of the home was the housewife. She was in truth and in fact the home-maker. In her girlhood her education included a liberal course in cooking. She was general cook, baker and confectioner, excelling particularly in bread-making, and in the preserving of pickles, jams and jellies. Practice in these arts brought perfection, and while she had her reward during her life, her memory was honored after she was gone; for what tribute to her skill, worth and faithfulness could be greater than that commonplace saying, "Just like mother used to make."

She had at best a pathetic array of utensils, and too often a pathetic meagerness of store with which to meet the requirements of the office to which her duty called her. Few women to-day would be content to run a home on such a bare outfit; but out of her, to us seemingly poor kitchen came always a meal that was substantial; and with keen, strong, health-giving appetites the family gathered about the table, and the mother found her reward and satisfaction in the zest with which the products of her culinary skill disappeared.

With the passing of time the old-fashioned manner of living has changed. As the country became settled and manufacturing sprang up, wealth increased, and the standard of living was improved. Population gathered in the cities where the congestion has become so great that the former method of supplying the food demand is inadequate and outgrown and here is where the manufacturer of food products enters. If progress consists in the multiplication of those means of supplying the wants of men that contribute to their comfort, then has the food product manufacturer been an agent of progress. Perhaps there were few more remarkable developments of the nineteenth century than the rise and progress of the industry that devotes itself to preparing foods. Through this development the food resources of the world have been wonderfully augmented affecting not only our own methods of living but changing the restricted diet of the polar regions and the tropics to the bounty of the temperate zone. Thus the poor man to-day may and does enjoy food luxuries which fifty years ago the rich could hardly obtain.

While the canning industry, a branch of food

preparation which shows the most remarkable expansion, had its origin in the discovery about 1795 by Nicholas Appert of France, that alimentary substances could be preserved in their natural condition by hermetically sealing, yet it was not until some time between 1870 and 1880 that the business assumed the dignity of an industry and entered upon an era of expansion which has carried it to vast proportions.

In the beginning of this industry the manufacturer who prepared foods confined himself to a very few articles, but there has been a steady and rapid increase in the subjects of his skill as well as in the volume of his business.

Recently I read the statement that more than one hundred things are now made from corn; and so have many fruits, vegetables, grains and meats lent themselves to the inventive genius and skillful manipulation of the manufacturer of food products.

In the meantime, the business has also offered an inviting field for the unscrupulous manufacturer. It was found that inferiority, imitation and adulteration could be so concealed beneath a veneer of attractive appearance and fanciful label that he could compete with, by underselling, the honest manufacturer, and as evil always seems to be endowed with more vitality and spreads more rapidly than good, the evil of adulterated and inferior food preparations swept over the country like a prairie fire. That peculiar trait of the American people which is called the "bargain counter mania," afforded the unscrupulous manufacturer a ready market for his products if he could sell them for a very low price. Cheapness thus became the goal of his productive ambition, and this ambition was realized and the goal reached by placing on the market products not containing the ingredients they were supposed to contain.

We have often heard of raspberry jam made from pumpkins and hay seed, treated as a joke, yet some of us know it to be a reality. Many of these substituted articles are not perhaps strictly unwholesome nor altogether unpalatable, but their chief offense lies in the fact that the consumer is deceived and the honest manufacturer subjected to unfair competition. The evil, however, as those familiar with the business know, takes on an exaggerated and dangerous form, where adulteration harmful and injurious to health is practiced. Startling disclosures have been made from time to time by the analysis of many food products, and the magnitude of the evil was found so great that eventually laws looking to the preservation of public health were passed by the various states, and the food commissioners of these states, in conjunction with the Department of Agriculture at Washington, set themselves resolutely to the task of wiping out the evil. They could not have engaged in a more laudable undertaking, and I am

sure the honest food product manufacturers of the country have been heartily in sympathy with their battle for reform.

In the meantime, during the progress of this movement to eliminate from the market impure or adulterated foods, the necessity of a standard has become apparent. What is a pure food and what is an adulteration? is a question susceptible of as many answers as there are notions as to what constitute purity and spuriousness. This difficulty and confusion is aggravated because of a lack of uniformity in the food laws of the various states. It has been possible to have as many standards as there are states, and the manufacturer has sometimes been confronted with forty-five different standards or forty-five different interpretations of the same standard. To relieve him from this difficult situation of doubt and uncertainty, and to harmonize the discord which has prevailed between the various state food departments and the manufacturer, Congress authorized the Secretary of Agriculture, in collaboration with the association of official agricultural chemists, to establish standards of purity for food products as a guide to the officials of the various states and the courts of justice.

This was a move in the right direction welcomed by all honest manufacturers. The labor of the commission has only been partly concluded, but the Secretary of Agriculture has, by proclamation, established a set of standards as official throughout the United States, which standards will go a long way toward settling many controverted points in the manufacture and distribution of food products.

I may urge upon the various commissions the desirability and necessity of co-operating with these gentlemen and with their aid adopt the standards when finally conducted. Go slow, it is U. S. government standard and must be correct.

The honest manufacturer will also welcome a national food law which now seems to be the only means of fully reconciling the different interpretations of the various state laws. Speaking for myself and my firm, we certainly will welcome such a law, and hope one of its provisions will be an "honest label," that the public may not be deceived; so that every article will be called by its true name. We contend that if a bottle is labeled "Strawberry Preserves" it should contain strawberries only, and no other kind of fruit. We believe that the adoption of such a label, and the enforcement of a national law is the only means which will protect the public from imposition by unscrupulous food producers.

In making standards for various articles of food the commission naturally has many troublesome questions to decide, and one which is of great interest to the manufacturer, to the commission and to the public, is that of preservatives.

The commission has not made public its conclusions, if indeed, it has reached any definite conclusions on that subject. This has always been one of the most difficult problems in the matter of preparing foods in a commercial way. It has been the point around which has centered the sharpest discussion and most widely divergent opinion on the part of both manufacturers and state officials. One has approached the question from the standpoint of theory, the other from practice, and here, as is often the case elsewhere, theory and practice are not in accord. I am very sure that every manufacturer would be glad to eliminate preservatives from every product in which his experience has taught him that they must be used in order that his goods may be distributed widely and remain wholesome until consumed, if some one with superior wisdom will tell him how, and indeed, this question deserves the greatest attention on the part of the eminent gentlemen who compose this commission, and we look to them, as representatives of our great national government, for the solution of this problem. The manufacturers are doing their part, but we believe that with such assistance we may more readily solve this vexatious problem. While there has been much research on the part of chemists, and experimentation on the part of manufacturers, there remains much to be learned. For instance, only recently it has come to our knowledge that certain fruits and vegetables contain in their natural state an acid which is sometimes used as a preservative in certain classes of food products. Now if Nature puts these preservatives into certain of her products it may be pertinent to ask why it should be unlawful for man to add it to certain others which will not keep without it.

For example, the salicylic acid which naturally in certain varieties of grapes, berries and other fruits; the benzoic acid found in ripe cranberries, etc.; a subject which I will not enter upon in detail, as it has already been discussed here by others, but before dismissing the thought to which this question gives rise, I wish to make a point in another direction having a similar bearing upon the fixing of food standards. I will use for my illustration the evolution which has taken place in producing acetic acid from the alcohol contained in fermented cider by processes requiring a comparatively short time and by which the cider is handled in large quantities.

When formerly the agriculturalist brought his apples to the town cider mill, and received the cider expressed from them, he carted it home in barrels and started to consume it first as sweet and later as hard cider; until eventually it became too sour to use in this way and was left in its original barrels to become so called, natural cider vinegar. After standing a year or so the farmer's surplus was taken to the general store and exchanged for

other utilities. By degrees, as the general store accumulated a considerable quantity of this vinegar, it was re-shipped to the city markets and sold to grocers—pure cider vinegar, without doubt—but often cloudy and unsightly and if judged by present standards, hardly an acceptable table condiment and preserving vinegar.

As the vinous fermentation of cider in a small quantity, in a barrel for instance, goes on slowly under general conditions, the alcohol gradually developed in it is light in quantity and with the inherent constituents of cider to produce acetic fermentation, this acetic fermentation soon attacks the vinous fermentation and eventually completely stops it; with the result that when all the alcohol has been changed to acetic acid a weak acidity is obtained—perhaps from 2.5 to 3.5 per cent—with very heavy solids, which are not the true cider solids, but simply the unattenuated sugar of the cider.

Any laboratory production of cider vinegar, even admitting that pure cider is obtained from a modern press and fermented in vacuum, would show a similar result, but under this treatment would have all the original constituents of fruit acids and mineral ash. Now, all analyses made and published by chemists or chemical laboratories that we know of have been obtained from cider vinegar made in a laboratory in a small way and against these tests stand the practical results obtained from pure, expressed apple juice manipulated by the manufacturer on a large scale, fermented in large volume, and after a full attenuation almost hermetically sealed in large vats where it is stored to continue the attenuation of what little sugar may be left and precipitate all albuminous and yeasty matters.

The hermetical sealing facilitates precipitation and avoids loss of alcohol, that being to the manufacturer of pure cider vinegar the constituent part of value. Such fermented apple juice after full maturity, contains an alcoholic strength of from 7.5 to 11 per cent of absolute alcohol by volume and by a modern method of acidifying this cider produces a vinegar with an acidity of from 6.0 to 7.0 per cent anhydrous acetic acid. This is done easily from the first day of October to the following first day of July every year.

Now, if this fully attenuated cider matures for a year or more we find that it loses part, if not all, of its fruit acids, which may be termed malic acid. In other words, the malic acid, which I suppose cannot be destroyed, is apparently changed into some other acid which only a chemist can determine, and which I believe, has been determined by competent authorities. Thus we see that a cider vinegar which does not readily respond to the ordinary test for malic acid should not be condemned and proclaimed adulterated, but that a verdict should be rendered only after a thorough analysis

in an absolutely well equipped laboratory by competent chemists. Permit me to say in this connection that a seller of vinegar should always be protected when a sample is taken by an official, by being given a pint sample from same vessel properly sealed and labeled; this is the law and custom in New York state and is eminently just and proper.

Again, by the high and perfect attenuation of the real solids, the extractive constituents in the apple juice, less sugar, are reduced to a minimum of about 1.40 per cent and a maximum of about 1.80 per cent. Only in very rare cases when cider has been pressed late in the season and from absolutely matured fruits of the russets or such species, or from a repress after the pomace has fermented for several days and again been placed in the press can 2 per cent of extractive solids be obtained.

I am only referring to cider vinegar made exclusively from all the pure apple juice expressed. This generally constitutes four-fifths of the first pressing and one-fifth of second pressing without any addition of water, in which true cider vinegar ash, even without an analysis of its constituent minerals is so distinct in its physical appearance, that no artificially made cider solids and added ash constituents can for a moment deceive the practical vinegar manufacturer, much less the experienced chemist.

Cider vinegar made almost exclusively from second pressing of pomace, or perhaps even third pressing which is often the case, with some cider of first pressing, which is unfit to sell as cider for a beverage, added, cannot obtain any standard.

Before I conclude my remarks on the question of standards for cider vinegar I desire to give the result of the analysis made of the sample of Apfelwein, which was secured from an exhibit made by the German government in the Agricultural Department. This sample was obtained in June, 1904, result of analysis was as follows: 0.46 acidity, 1.37 per cent solids.

The lead acetate test for malic acid produces at first a turbidity which will not settle for several hours. Upon neutralization of the sample and then adding a solution of the lead acetate a voluminous precipitate of lead malate is obtained at once. From this experiment and others made previously on thoroughly fermented cider it would seem natural to conclude that complete fermentation diminishes the quantity of malic acid and solids.

This report from chemist in the employ of our firm, Mr. G. F. Mason.

The action of the commission on standards in submitting its conclusion for discussion and criticism before they are finally adopted, seems to us most commendable, and I for one think that the best results will be achieved in an exchange of

opinion. It will be helpful to the commission in arriving at a proper solution of this very vexatious problem, which is a recognized proper standard of purity. This consultation will give the commission an insight into the various difficulties which lie in the path of the man who deals with the matter in a practical way and afford it an opportunity to help him solve his problem. In our judgment no extreme, ideal or commercially impossible position should be taken. We believe there is a mean position—one that will protect the nation's health from injurious substances and protect its pocket-books from being imposed upon by deceptive, misbranded articles, and which may at the same time not be so exacting and impossible of attainment commercially as to drive out of business the small manufacturer, who strives to be honest in making his goods, and fair in selling them. In other words, a standard might be fixed so high that it could be attained only by very large concerns, with ample capital and extensive trade, but which would mean that the manufacturer in a small way would have to go out of business. The standard should be high enough to give the consumer the full and complete protection to which he is entitled, and yet not so high but that all manufacturers, large and small, can do business under it. Care should be taken that the standard designed to protect one class should not unfairly oppress another, and in our judgment there can be for each food and drink a standard which will fully protect and subserve the interest of all alike whether manufacturers or consumers. There is much more in this problem than appears on the surface—a study of it multiplies the difficulties instead of reducing them. For this reason it will probably be a long time before the matter is settled, but the present movement denotes progress and so it is welcomed.

In the progress of civilization the nations of the earth are being brought into closer contact with each other and as the barriers to intercourse disappear the nations come to see that they have much to gain through the establishment and maintenance of trade relations. The "Markets of the World" has become a familiar phrase. People now think in terms of world-wide significance. Every progressive nation is increasing its imports, and its exports as well. The obvious interpretation of this is that every country finds that it can buy some things to better advantage than it can make them—a profitable policy which has made the present known as the commercial era. Thus the great world problems are seen not to be the institution of this or that form of government, the dismemberment of one country or the union of others, not political problems, but the development and expansion of trade; and there is probably no one generic class constituting the subject of international trade which exceeds food stuffs in value

and importance. Surely if we find it so highly necessary to have a food standard for the purpose of interstate trade what shall we say as to a like necessity for the purposes of international trade? The necessity for this will increase as international trade increases and that it is necessary is evidenced from the fact that this country, as well as others, has been obliged to adopt protective measures to keep out the flood of impure and adulterated foods and beverages that had set toward its shores.

A law providing for the inspection and rejection of foods which are adulterated is wise and timely, and the condition which brought it into existence emphasizes the need for an international food standard. While there may be many difficulties in the establishment of such a standard, the time will come when the principal nations interchanging their food commodities will, for mutual protection and advantage, come to an understanding on the question. It is a reform that will come with the increase of trade, and if the present rate of increase is maintained, the time for reform is not very far away.

In this connection I would like to say and urge upon the commissioners of the various states that they exercise a little patience and not be too ready to adopt as permanent the standards which have been issued by the gentlemen whom Professor Scovell represents here to-day. They have many perplexing problems to solve, and I think we all agree that their method of procedure in inviting the manufacturer to participate and help them solves these problems is most commendable. You must remember if we adopt these standards they are going to be United States government standards, and they cannot very well afford to be wrong when we have them in that form. According to the preliminary reports, they define horseradish as the fresh grated root with a certain amount of vinegar added. We put out a powdered form of the fresh grated root which is adapted for extremes of climate, and which will keep, with the bottle corked, for an indefinite period, whereas the fresh product, with vinegar added, will keep for perhaps sixty days. These gentlemen have not found that out yet.

CHAIRMAN BAILEY: We always look for a good paper from Mr. Evans, and I think he has outdone himself this time.

MR. BIGLOW: There is one point in Mr. Evans' address that I would like to comment on. What I have to say is hardly of sufficient length to warrant my coming to the platform, but the point I refer to is the natural occurrence of salicylic acid and benzoic acid in fruits. Of course, we have amply and repeatedly demonstrated that the amount of salicylic acid occurring in nature is so small it might really be ignored from a practical standpoint.

As has been pointed out by Mr. Mason, however, and as I have been able to confirm myself, benzoic acid occurs in cranberries to a somewhat larger extent, a considerably larger extent, but yet, although it occurs there in a quantity perhaps half as great as is used sometimes with jams, perhaps as great a quantity as is used in other cases, if there were a sufficient amount to lead to a suspicion of its injuriousness, or which demonstrated its injuriousness, then we would have no question to-day about the wholesomeness of this substance as it is questioned now. It is a matter regarding which we are somewhat uncertain. Now, so far as its occurring in nature is concerned, and as I stated, that was offered as an argument for its wholesomeness, I can hardly be convinced because our most deadly poisons occur in nature, sometimes in the foods we eat, and in our beverages, tea, coffee, cocoa and chocolate, and in tobacco, which is not consumed, but in which we take a certain amount of nicotine, and in even the products which are used for starchy food, such as the cassava, and to a much less extent the potato, we have poisonous substances; and yet from those facts we cannot argue that the substances themselves are harmless, nor would we tolerate the addition of those substances to food. In saying this, I do not wish to express any opinion at all regarding the wholesomeness of the preservatives: that is not my idea on this occasion, but merely to say that this cannot be advanced as an argument for their wholesomeness.

CHAIRMAN BAILEY: We will now take up the baking powder controversy. I believe that is the next thing on the program. The first address will be by Dr. J. W. Mallet, Professor of Chemistry, University of Virginia.

#### ADDRESS OF DR. J. W. MALLET.

Mr. President and Gentlemen:

The title which appears on the program for the paper which I have prepared is not altogether correct. I do not propose to discuss the question of baking powders in general, but to consider solely a single point which undoubtedly is closely connected with the subject of baking powders, namely, the question whether aluminum compounds, some of which are used in some baking powders, are wholesome or unwholesome. It is a question which has been a good deal involved in the discussions which have been going on in the last day or two. Nearly all are agreed on the proposition that articles which are distinctly detrimental to health ought to be excluded from food products offered for sale and use. The question then naturally arises, of course, "which substances are detrimental and which are not?" And it is solely as a small contribution to that subject that I present a

short paper. The exact title of the paper as I have written it is this: "Relations to Health of the Compounds of Aluminum."

The facts as to the distribution of the compounds of this element in nature are quite remarkable. On the one hand, their immense abundance and variety in the mineral kingdom; on the other, their great rarity among the inorganic constituents of plants, and practically entire absence from the list of the inorganic constituents of animals.

The relatively feeble reactivity of aluminum and its compounds at common temperatures have tended to suggest that, although without value in relation to metabolism in the animal organism, they would not *per se* be harmful, and this view has been taken by many, while controverted by others, two practical matters having more particularly brought the matter up for discussion—the one, the use, to a limited extent as yet, of metallic aluminum as material for cooking vessels and containers of food; the other, the very extensive, and to the manufacturers' profitable, use of alum as the acid ingredient of baking powders.

One of the most serious impediments in the way of rational progress in sanitary matters has been a disposition on the part of too many to extreme and over-positive conclusions and to exaggerated statements, and in few directions has this disposition been more notably exhibited than in regard to the wholesomeness or the injurious character of aluminum compounds under the conditions actually involved in their use. Some would class them with "poisons" in the most sweeping and uncompromising way; others would have them viewed as practically altogether inert and harmless.

The question ought not to be disposed of in this simple and summary way.

We should first see what are the particular compounds of aluminum which are liable to be taken into the human body under ordinary conditions, and how far their effects are to be attributed to other constituents than the aluminum. Thus metallic aluminum may of course be excluded, and as far as its use for cooking vessels or vessels for containing food is concerned, they can only yield soluble compounds to be taken in with food as the result of the action on the metal of some of the food ingredients, the latter presumably of themselves harmless. In the case of alum used in baking powders, it is generally admitted that the double salt itself and the aluminum sulphate which it contains are to be counted among gastrointestinal irritants, and in somewhat large doses may even be properly spoken of as poisonous. But it is claimed that in bread made with alum baking powders, no alum or aluminum sulphate remains as such, but that, if the ingredients are properly proportioned and uniformly mixed, the aluminum is, in the process of making the bread, wholly con-

verted into hydroxide or under some circumstances into phosphate, and that these are insoluble and inert.

In examining such claims one has to admit the possibility of defective manufacture—either incorrect weighing off of the ingredients or their imperfect mixture. But the risks under this head are probably not very great. The process of manufacture is simple and it may fairly be assumed that in general it is properly carried out.

It is also possible that in using an alum baking powder to make bread, it may be irregularly distributed through the flour, a larger proportion being left in one part of the bread than in another, or that too small a quantity of water may be used, leading to imperfect reaction between the acid and alkaline ingredients. In this latter case, the resulting diminution in the amount of carbon dioxide gas given off, and therefore inferior porosity or "lightness" may lead to habitual increase in the quantity of baking powder taken for a given quantity of flour. But errors of this sort also are not likely to be so common and extensive as to require very serious consideration.

Assuming that no fault is to be found with the baking powder either as to the process of manufacture or the method of use, it may next be considered how far any of the substances present after chemical reaction between the ingredients, other than the aluminum compounds, can be held responsible for any ill effects upon health. In the aluminum sulphate of the original alum, the sulphuric acid radical is united to an element of such feebly basic character that the astringent and escharotic action of the compound may be viewed as the effect of a mitigated sulphuric acid, but there seems to be good reason for believing that all the sulphates when in considerable quantity, even those of harmless and strongly basic metals, such as sodium and calcium, interfere with digestion to a greater or less extent, and in this sense alum baking powders, as also in some measure those made only with calcium acid phosphate, are to a certain extent objectionable.

The main question, however, is that of the effect to be attributed to the aluminum compounds present and ingested with the bread.

When alum alone is used as the acid ingredient of the powder most of the aluminum is left in the bread as hydroxide, a little phosphate being also formed at the expense of the phosphates of the flour. When, as is more common, alum and the acid phosphate of calcium are both employed, a much larger proportion of the aluminum is converted into phosphate. It has been commonly assumed that both the hydroxide and the phosphate of aluminum are insoluble in water, and that they should therefore be considered as inert in the alimentary canal.

In numerous experiments with alum baking

powders of different brands, I have found that the aqueous solution obtained by acting upon the powder with water in excess is almost always alkaline in reaction, and notwithstanding this, the aqueous solution, carefully filtered, invariably contains a small quantity of aluminum in the form of a soluble compound or soluble compounds. I have also recently found that an aqueous infusion prepared from the bread itself made with alum baking powder of various brands, when filtered perfectly clear, evaporated to dryness, deprived of organic matter by burning the latter off, the residue fused with an alkaline carbonate and the product of the fusion treated with hydrochloric acid, yields small amounts of aluminum, which therefore must have been present in the form of soluble compounds in the aqueous infusion of the bread. It is therefore not a fact that as a part of the material resulting from interaction of the ingredients of the baking powder, either in the presence of water alone or with the addition of flour in bread making, the aluminum is altogether in the condition of compounds insoluble in water.

But it must be remembered that it is not to the solvent action of water alone that the bread and the aluminum compounds it contains are exposed in the alimentary canal. Both the hydroxide and the phosphate of aluminum are capable of being rendered soluble by the hydrochloric acid normally present in gastric juice, and quite considerable quantities of aluminum are taken up by an acid of the strength usually presented by this secretion. In the use of vessels of metallic aluminum for containing or cooking food, it has been shown that organic acids belonging to the food may also to some extent bring the metal into the form of soluble compounds.

In experiments with an artificial gastric juice containing hydrochloric acid and pepsin in proper proportions, I found years ago that not only was the acid reduced in amount by formation of aluminum chloride, but also the pepsin was in part precipitated and rendered insoluble when the juice was treated with aluminum hydroxide or phosphate at the normal temperature of the human body. Apparently the organic matter of the soluble proteid enzyme enters into loose chemical combination with aluminum hydroxide or a basic aluminum salt, much as in the action of aluminum mordants in dyeing processes. It is probable that an analogous precipitant effect may extend also to the soluble proteid constituents of food.

Both my own experiments and those of others go to show that to this double action on the constituents of the gastric juice is largely attributable the ill effects of aluminum compounds when present in food. Among more recently observed facts leading to this conclusion may be cited the results obtained by Dr. R. F. Ruttan, who has shown that the use of alum baking powder in bread has more

influence on the digestion of proteids than of carbohydrates, and more influence on gastric digestion of proteids (involving the presence of hydrochloric acid) than on intestinal digestion of the same class of food material in an alkaline medium.

In addition to the injurious effects upon the function of digestion, there is a considerable amount of evidence furnished by the experiments of more than one investigator, that soluble aluminum compounds are capable of specifically affecting the nervous system, but to this I merely allude, as I have not myself studied this part of the question.

As regards the extent of the mischief fairly chargeable to aluminum in connection with food, it may be said that the extravagant language sometimes used, should be laid aside. Such terms as "poisonous" or "toxic" are certainly not applicable in anything like the same sense in which they are applied to substances like arsenic, phosphorus or corrosive sublimate. On the other hand, we are fully justified in applying to aluminum compounds such as call for practical notice in relation to food, the term "unwholesome." The degree in which they are liable to produce unwholesome effects will of course depend upon the quantity of aluminum ingested, and its more or less habitual use. Thus the risk from aluminum cooking vessels or food containers may be viewed as generally very small, while the corresponding danger from alum baking powders must be accounted decidedly more serious, both because of the amount of the objectionable material and the long continued exposure to its effects. Naturally also there must be large allowance made for variation in the condition of persons exposed to such effects—age, sex, general good or ill health, especially vigor or feebleness of the digestive organs, and probably the idiosyncrasy of individuals.

A word may be added in conclusion as to the bearing of the periodic law of Mendelejeff on the position among the elements of aluminum in its relations to health. The recent extended study, under the auspices of the Bureau of Chemistry of the U. S. Department of Agriculture, of the sanitary character to be attributed to boracic acid and borax when used with food as preservatives, had led to much the same conclusion in regard to these boron compounds as that just stated in reference to the compounds of aluminum—that they are not in the ordinary sense poisonous, but that, even in small quantities when habitually used, they are distinctly unwholesome, and that they manifest their effects in pretty much the same way, by inhibition of or interference with digestion. This is just what might be expected from the fact that boron and aluminum occupy precisely analogous places in the periodic classification of the elements—boron being the third member of the first of the original Mendelejeff periods and aluminum the third member of the second period.

It is a very remarkable fact that a material which forms about six or seven per cent of the entire known mineral matter of the globe, a constituent matter of almost every rock, clay-bed or field, should not find its way either into plants or animals save under very rare and exceptional conditions. Aluminum has been detected in certain plants, chiefly of very low origin, fungi, but as a rule aluminum, although in the soil, is seldom found in plants and is entirely absent from the ash of animal bodies.

I may say possibly with propriety, as the periodic law is not generally known outside of scientific chemistry, that it involves the occurrence of all the known elements in what are known as series; in each of which they run from 1 to 8, and when you come to the 9th number, arranged in the order of the atomic weights, you find you have got a reproduction of the properties of the first; when you come to the 10th you have got a reproduction of the properties of the second; when you come to the 11th you have got a reproduction of the properties of the third. Now boron and aluminum hold precisely analogous positions, the former in the first of the periods as originally held by Mendelejeff and the latter (aluminum) in the second, therefore we should expect not only the physical and the chemical but the physiological effects of the two substances to be essentially the same, and that is what we believe to be the truth.

CHAIRMAN BAILEY: We also have an address on this subject by Mr. A. Cressy Morrison, Secretary of the American Baking Powder Association of New York City, whom I now introduce to you.

ADDRESS OF MR. A. C. CRESSY MORRISON.  
Mr. Chairman and Gentlemen:

It gives me great pleasure to discuss the subject of baking powder and the baking powder controversy to-day, but before doing so I wish to call attention to an error which has been made in the program. In so doing I am but following the distinguished example of Professor Mallet. The title of the address was "The Baking Powder Controversy." The idea which was presented to me as the basis of that address was that it should be a dignified presentation of all the facts which have surrounded one of the most remarkable commercial contests which has taken place during the last five years or at any other period. I think it is only comparable perhaps to the Standard Oil contest. It differs from that struggle in that the smaller manufacturers have in our case won the fight.

I find that the title of my address was changed from "The Baking Powder Controversy" to simply "An address," at the request of Mr. LaFetra of the Royal Baking Powder Co. I see no reason why I should modify a paper, which I have been requested to prepare, in order to make it a little

easier for that company, and so I shall stick to the title as originally outlined.

Baking powder is a modern commercial product. It was not an invention. It was an idea. For years a species of baking powder had been prepared in the household. It finally occurred to a druggist in Indiana that a more skilful preparation could be made in the pharmacy, and he thought it wise to put this powder up in packages and sell it over the counter. It found a ready sale. Climatic conditions, causing deterioration of the powder in the original packages, soon led to the use of cans, and the evolution was complete from household chemistry to an industry. The popularity of baking powder soon made itself apparent, and the business grew. The first baking powder was made of cream of tartar and soda. Starch was used as a filler in order to maintain the separation of the two articles. Starch is not an adulterant of baking powder. It is simply a means of keeping the chemicals separate and keeping them dry. As soon as cream of tartar baking powder found a large market—a national sale, chemists set themselves to work to discover other means of leavening bread by evolving carbonic acid gas. They soon found that a substance which is frequently referred to as “alum,” (which we believe to be basic aluminic sulphate and not alum, but which for convenience during this talk I will designate as “alum”), to be twice as strong as cream of tartar and less expensive. It was also found that it would keep better and that it had other qualities which recommended it as a good commercial article.

In a short time, manufacturers of this “alum” baking powder sprung up, and they began to become serious competitors of the cream of tartar interests. In the meantime two conspicuous manufacturers of baking powder had developed. Both strangely used the name “Royal.” One was the original, the Hoaglands, and the second I believe was an imitation, Ziegler. They immediately attacked each other in the courts and it was finally found that together they could maintain the valuable trade-mark; apart, they could not, so they were forced together by the exigencies of the case and that marks the entry of William Ziegler into the baking powder business. William Ziegler is probably the most extraordinary man that has yet been evolved during the rise of the baking powder industry. After a short period of time, the manufacturers of cream of tartar baking powder began to realize that the competition which was growing up against them from “alum” baking powder manufacturers was serious and must be met. Something must be done. They were confronted with the necessity of either abandoning cream of tartar for the stronger, and we believe the more effective and we further believe the more wholesome acid, or continue the manufacture of cream of tartar baking powder. To abandon cream

of tartar baking powder meant that they would have to enter into competition with several other vigorous factories; to retain cream of tartar meant that the heavy investments they had already made in the manufacture of cream of tartar itself could be continued. The manufacture of cream of tartar in this country had been pretty well developed and the baking powder business had furnished for their cream of tartar refineries a large and profitable market. The weight of their investments in both branches of their industry, therefore, decided them to continue in the cream of tartar baking powder business. Finding that “alum” baking powder was persistently gaining and the price of “alum” falling constantly, so that those baking powders could be sold cheaper and cheaper—they were maintaining a price of fifty cents a pound as against the competition of “alum” baking powder at ten cents a pound and double efficiency—and not wishing to abandon cream of tartar they were forced to the necessity of devising other means to crush out this growing infant industry. The best possible and most authoritative statement as to what those other means were, and who devised the other means, I will later quote from court testimony, the sworn evidence of William Ziegler.

While the returns from the manufacture of cream of tartar baking powder had at an early date developed to a stupendous figure, reaching, I am told, and in fact I have evidence to prove it, a net profit of \$735,000 per annum, clean money, in 1888; these partners who had of necessity got together could not agree; the Hoaglands and Ziegler quarreled. William Ziegler charged that the Hoaglands had used money for legislation—a very wicked thing to do; he charged that they had raised their salaries enormously with the idea of freezing him out of the baking powder business and that the raising of those salaries was not legal, but larceny. He went into court on that point and he won his case; the princely salaries which had been paid for years were restored to the treasury. It became necessary during this struggle for the Hoaglands and Ziegler to show to the court how useful each had been to that great institution, The Royal Baking Powder Company, their money maker. It became necessary for them to show what each had contributed to the development of the business. The Hoaglands went into court in answer to Mr. Ziegler and said “it is not our product, not our product that commands this ready sale in the market because of its own intrinsic value; no. It is because of the cunning and subtle management. This business hangs by the subtle tenure of management and it cannot continue to exist without that management, and one day’s error would break down this magnificent business which we have built up, and it is our management which accomplished this.” Ziegler answered: “That may be true; I contributed also to the upbuilding of this industry. I originated the alum war, I got the

chemists, I induced some to change their opinions from against us to favorable to us. I am the one who did this magnificent thing and protected this industry from the inroads of the competition of alum baking powder, but the Hoaglands foolishly opposed me. Why did they oppose me? Because they said 'we ourselves are manufacturing alum baking powder, and you stir up these people and they are liable to trace it up to us.' There wasn't any moral ground in William Ziegler's boasted usefulness, and it was merely a question with the Hoaglands of whether they would be found out. These are the facts taken from the records of the court. I am not going to give you details, but I have here documentary evidence for every statement I wish to make. I shall confine myself to what I can substantiate, and these documents are available to the committee any time.

The quarrel led to bitterness. This was in 1888. Hoagland said to Mr. Ziegler, "Buy or sell." Ziegler said "I will sell." He sold. He received a large price. The baking powder business was disintegrating. Mr. Ziegler came west and bought the Price business. One of the Hoaglands went out and organized the Cleveland Baking Powder Company, and then began a free fight among themselves. For ten long years they fought vigorously, advertising the unwholesomeness of each other's products. William Ziegler saw in that ten years the ascendancy of the "alum" baking powder. He saw that the "alum" baking powder business had grown enormously. His investigations showed that five pounds of "alum" baking powder were sold to one of cream of tartar; to-day it is seven. He said, "If this inroad continues, we are gone; if we fight among ourselves we are gone. The commercial supremacy of "alum" baking powder, the fact that sixty million people have used this product for twenty-five years, proving its wholesomeness, no matter what we may say about it, is overwhelming proof that if we don't stop this competition and fighting among ourselves we are gone.

William Ziegler is far seeing. He approached the Hoaglands. The old quarrel was patched up. The Cleveland quarrel was patched up. They joined forces and William Ziegler capitalized the cream of tartar baking powder business for \$20,000,000. The original capitalization of the constituent companies, all of them, was less than \$1,000,000. This \$20,000,000 of capitalization, over \$19,000,000 of which was water, in which these gentlemen asked the public to share the profits, was based upon "A subtle tenure—one day's mismanagement, and the business would be gone." That is their own sworn testimony. Now, gentlemen, the combined business is a magnificent business. It is an eloquent testimony to the effectiveness of good advertising. I presume that this business aggregates twelve or fourteen millions pounds of baking powder annually. I think the profit per pound, gross, is perhaps 29 to 31 cents,

presumably more; my figures are on the side of liberality. This means a gross profit of over \$3,000,000 annually, so that while the Royal Baking Powder Company does but a small proportion of the total baking powder business of this country, it still is a very handsome business.

Now what happened to alum baking powder during all this time? Over 500 manufacturers developed, some large, some small. The process of evolution and the survival of the fittest had gone on with them as in all other industries. A business in alum baking powder had developed into an aggregate of 86 to 96 million pounds of baking powder sold annually. During the interval of quiescence and peace the entire south was lost to the cream of tartar interests. The cream of tartar baking powders sold these do not exceed more than two and one-half per cent of the total business of the south. It is practically all alum baking powder there. And let me say that either the Royal Baking Powder Company or the chief stockholder of that company, William Ziegler, who owns nine million dollars of the ten million of its common stock and controls its policy, is to-day the largest manufacturer of alum baking powder in the world, supplying two-thirds of all this great business of the south. You are all familiar with the advertising of the Royal Baking Powder Company and know how it states that "alum is a poison, alum is a corrosive acid, alum is all that is wicked; think of giving it to women and children"—they would do much better to come here to-day and say, "We also manufacture this." The gentlemen of the alum baking powder industry would listen to their chemists and to their representatives and to their statements with a great deal more consideration if they would say, "We have abandoned our alum baking powder business ourselves because we think it is wrong, therefore we ask you to do the same." That would be a little more consistent; that would be fairer. But to come here and try to drive us out of business in the territory where we affect their trade, and to say nothing in the south about the same subject is a very strange thing. Now you wonder why a concern as large as that can be so inconsistent. It does not seem credible. The reason is this: their alum baking powder with double the strength of the Royal Baking Powder Company's products. If they permit that product to come north or northeast, where they control perhaps 30 per cent of the total business, every two cans which come north will replace a can and a half of their goods; that means that for a profit of two cents, or three cents at the outside, they would sacrifice about 35 or 40 cents. No, they don't want these wicked alum baking powders that they are selling in the south to invade the north. That is why they are willing to kill off the people of the south and save the northern people.

Now with the re-united business, the Royal back

again as one combination, with William Ziegler, a master mind, a captain of industry, in control, he re-awakened, as was logical, the alum war, and the first thing that was done was to steal through the legislature of this great state of Missouri a bill that said no one should use in food products or articles used in the preparation of food, arsenic, strychnine, bismuth, alum. Put a dog in bad company and then give him a bad name and hang him. No one knew what that bill meant. The alum baking powder interest was a scattered interest; it was composed of a lot of individual manufacturers, intelligent, but each of them doing a local business; there was no cohesion, no co-operation, and one morning the thirty-one manufacturers in the state of Missouri woke up and found their business was unlawful after they had conducted it for twenty-five years. They furnished 90 per cent of all the baking powder used in the state and had for years. They found that their product was unlawful. Why? Because alum was associated with strychnine and arsenic and bismuth. I am very glad to-day that one of the chemists representing the Royal here, though he neglected to state that, has admitted that its statements are "extravagant." They have thus receded from their position. They have in five more years found no evidence that would substantiate their belief in their own statements. We are rather surprised at such admissions. We thought we would hear arguments to-day that would settle the controversy, that would declare our powders were poisonous. Instead of that they say "Gentlemen, take all our statements about the unwholesomeness of that substance with a little grain of salt," salt of aluminum perhaps.

The Missouri anti-alum bill having passed, the local manufacturers got themselves together and said, "We will have to abandon our business or move out of the state." They said, "This is liable to go into other states. Let us form a national organization." A national organization was formed and started with five members present. Mutual danger brought mutual cohesion. The scattered and discredited industry was brought together. One of the most extraordinary illustrations of business combination was the way these manufacturers who had been fighting for years, quarreling with each other, cutting prices and doing what they could to get each other's business, came together and said, "We must oppose this cormorant or we will be driven out of business." The moment they got together they asked, "Are we right? Is our product wholesome, or are these claims against it well substantiated?" An examination of the literature then extant showed that there was no claim that food prepared with alum baking powder ever hurt anybody. Sixty million people in the country were using it, the whole south using it, nobody harmed, nobody injured, no complaint from the local boards of health calling for the suppression

of the industry. They found that the odium which had been placed upon alum, or which they then supposed could be placed upon alum, was being attached to the residue left in the food, and the public was thus being deceived. The residue left in the food is as you know not alum but a different substance. Now the object of a baking powder is the evolution of carbonic acid gas for raising the bread. Yeast produces carbonic acid gas, cream of tartar and soda produce carbonic acid gas, alum and soda produce carbonic acid gas. It comes from the combination of the chemical elements; the carbonic acid gas escapes, rises and leavens the bread. The substance left in the food is the residue, is what we eat. Not cream of tartar or alum but Rochelle salts or hydrate of aluminum. Now the only question is, Is a baking powder efficient, economical and is the residue wholesome? We knew our powder was efficient and it was economical. Now was it wholesome? A test case was brought to try this law and in the preparation of that case it became necessary for us to make experiments and find out the truth. Our industry wanted to know the truth; it *had* to know the truth. It had to meet these eminent gentlemen, some of whom are present here to-day, and either admit their contention that our product was unwholesome and to go out of business, or meet that contention with experiments equally well conducted, more thorough if possible, to convince them they were wrong. The court was to decide this question. We had to find out absolutely where the alum baking powder industry stood. I will never forget what happened when this vital question came up at the first meeting of the American Baking Powder Association. A man manufacturing at that time over ten million pounds of baking powder a year, said, "Gentlemen, I want the truth; if I am wrong I will go out of business; and I would like to have a resolution passed, including every one present, on that particular question, because I want to know the character of the men I am associated with. Ever since my family came to this country nearly three hundred years ago we have been public citizens and public servants. I am as good an American citizen as anybody. I will not poison my fellow-man, and I want it understood that the truth is the thing we are after and not a system of scientific subtleties which will excuse us and get us out of a hole." And on that basis investigations were started. Did the Royal Baking Powder Company wait until those experiments were thoroughly completed? Not at all. They were afraid of them. We had a stipulation that they should not go into court until such and such a date, pending these experiments that were being conducted, and they did their best to break that stipulation. Finally they succeeded in cutting us down thirty days, but we had got ahead of them. The scientific committee

that was brought together to investigate this matter has foreseen the necessity of prompt action and they went into court with the results of their experiments. In that court were two gentlemen who are here to-day, Professor Mallet and Professor Vaughn. Professor Mallet had conducted experiments in 1888. It was rather an elaborate series of experiments. He did not conduct those experiments on food prepared with alum baking powder, but on the residue left by the reaction of alum baking powder. The normal constituent of a quart of flour made into bread products contains somewhat less than fourteen grain of alumina. Professor Mallet took 60 grains in one case on an empty stomach. He said he felt depressed. We were confronted by experiments conducted by Professor Mott, an eminent man, who fed five small biscuits to a brindle dog weighing 31 pounds, and he put 17 teaspoonfuls of alum baking powder into the small biscuit and these in turn into the small dog. The dog ate them and the dog was "depressed." We considered those partisan experiments. We came to that court with experiments on human beings, experiments conducted properly with food prepared with alum baking powder. Did they meet us? Not at all. Why? They said, "You gentlemen might make a mistake in the manufacture of your powder; you might put an excess of alum in." We anticipated that. We brought people who worked in our factories breathing alum dust for as long as twenty-three years. I will never forget the rosy cheeks of a man who said, "I have brought a pound of this stuff, and I will eat it for you." They asked, "Is there anything the matter with your digestion?" and he said, "No, I eat my four good meals a day and can eat the fifth if it is coming." Only yesterday I was in a factory where a bright, rosy-cheeked girl has worked for ten years in alum dust. Was she emaciated and thin? Didn't she relish her lunch? I guess she did. This is the terrible poison the Royal people talk about. We know it will never hurt anybody. There is a reason why there will never be an excess of alum in powders, however, and it is a commercial reason. Alum is the most expensive ingredient of alum baking powder, and I would like to see the alum baking powder man who would be foolish enough to put too much of the expensive ingredient into his powder.

Mr. Mallet and Mr. Vaughn did not appear in the Missouri test cases as the representatives of the Royal Baking Powder Company. They appeared as disinterested chemists who had been called by the state of Missouri, and it was only on cross-examination that we ascertained the amount of their fee from the Royal Baking Powder Company.

At the same time that the test case was tried the Mason Committee, headed by Senator Mason, was conducting a food investigation, junketing around the country and getting testimony. Professor McMurtrie of the Royal Baking Powder

Company turned up something like 62 chemists who were called by Senator Mason out of a clear sky, and all of them testified that "alum" was a bad thing,—they did not approve of alum. It reads all right, but it doesn't mean anything. Remember there is no alum in the food. We submitted experiments, the same experiments that stood the test of the court, to this Mason Committee and there was a great scurrying around. The whole two years' work in producing that Mason report was gone. What did they do? They telegraphed all over the country to 31 more chemists, among them Professor Mallet. Professor Mallet went down and read the paper which he produced in 1888, and which he read to you to-day, sixteen years old. When he read that paper he said: "This is the paper you telegraphed for, Senator Mason;" then gave his testimony and declared he was "disinterested." Well, we heard of that as soon as he said it. When he got back to Missouri we asked him why he had prepared that paper, which had been published in the "Chemist" of London, and which stood as a scientific background for the arguments of the Royal Baking Powder Company for twelve years, and which we always supposed was a scientific paper, he stated that he prepared it at the request of Mr. Hoagland of the Royal Baking Powder Company, yet he submitted it under oath as *disinterested testimony*.

Prof. Vaughns' record in the matter is no better than Mallet's. The only difference between them is that: whereas, it took a page or two of cross-examination to make Mallet admit his connection with the Royal Baking Powder Company, it took several pages to catch the agile Vaughn.

In developing the story of this controversy it is necessary to talk plainly. Here is the opportunity, and we are going to do it and we must do it. Professor Vaughan and Professor Mallet spent weary hours in producing theoretical evidence in this Missouri court as to the various evils which *might* come from the use of food prepared by the use of alum baking powder, basing many of their conclusions on what might happen if alum were injected into the blood. Remember there is no alum in the food. We then asked: "Have you ever in all your experience or reading come across a case of mal-nutrition, functional disorder or disease which you can attribute to the use of food prepared with alum baking powder?" They had never encountered such a case, and they answered "No". The Court thereupon decided that the testimony of the physiological experiments, plus the admission of the prosecution that they had never encountered any case of bad results from the use of food prepared with alum baking powder, stood as a "stone wall" against any *theoretical deductions*, and declared that alum baking powder was wholesome, and the Supreme Court of Missouri substantiated that decision.

Our experiments were then young. Remember, we were not trying to get into court. We were seeking the truth. For four years after that our experiments were conducted on human beings. We traced the effect of food prepared with alum baking powder on animals of various kinds and on human beings in every possible way we could think of or which the eminent chemists could devise. All this in order to ascertain if there was any possibility of error. We are prepared to state unqualifiedly to-day that if there are any physiological experiments that are submitted to this body, by our opponents, if they have been honestly conducted, they will bear out our experiments. Our powders are wholesome. We are not wrong. We are right. We know what we have done, and we are not afraid of any honest experiments or any thing that can be proved by the most rigid investigation.

Now, for five long years while this controversy has been going on, our opponents have announced that the colleges of this country have been conducting physiological experiments. Representative Dowse, who was their spokesman before the Massachusetts legislature, asked the legislative body to wait a year before passing a bill, because these experiments would give them overwhelming evidence on which to base a law which would exclude us from the markets. Those experiments have never been presented to the public. Why? Because, if honestly conducted, and we believe they were, they have borne out our evidence and they did not dare to present them. I see that Professor Mallet has modified his position. Does he know of these experiments?

Professor Vaughn will not dare present these experiments to you. He will entertain you with theoretical deductions taken from test tube experiment conducted in his laboratory. Nothing else. He must make his case. We want the truth, the *whole* truth.

Now, what happened in Missouri? The Supreme Court of Missouri decided that while our product was wholesome, the legislature had the right to pass any law prohibiting any food product, wholesome or otherwise, and it could not review the acts of the legislative body. That led to the necessity of a repeal of the law on the statute books of Missouri.

Now, before I take that up, I want to tell you what occurred in other states and in the national government. In twenty other states, twenty-seven different times, bills were presented on the line of this Missouri bill, sometimes a splendid pure food bill, with an amendment or clause, sometimes a pure food bill without any amendment but a clause which was to be put in afterwards without any hearing. In these hearings before state-committees, it was necessary for the American Baking Powder association to appear and present its side of the case. Before these twenty-seven legislative

bodies and twenty-seven times, our arguments have overcome the opposition. They have not brought forward a single new fact. There (indicating) are a thousand pages in the two thousand-page book I have before me, printed and ready, showing the extent of this controversy. In Washington, in the federal courts, wherever we have appeared, the evidence which they have presented has been met and the decision has been our way.

To give you an illustration of the methods of this corporation, I will take, for instance, the State of New York; I might take Massachusetts or New Jersey or Arkansas, or a dozen other states, and later I will touch upon Missouri, but for illustration New York is a good example. The Royal Baking Powder Company never has appeared. It does not dare to show its hand. It never has come forward and said, "Gentlemen, we are the Royal Baking Powder Company, and we believe in this and we ask this legislation." No. They have worked behind a mask known as the "National Health Society." The National Health Society, according to Senator Stone of Missouri, consisted of the good people of Missouri. Our investigation brought out the fact that his conception of the good people of Missouri was Senator Stone, his son and one minister—three, not three hundred or four hundred, but three. That was the National Health Society of this state. It issued elaborate bulletins from offices which did not exist. It was a fraud on its face, and has been repeatedly denounced as a fraud. The President of that society, Daniel J. Kelly, who is a fugitive from justice from this state, according to his affidavit, made it appear that it was doing a worthy work; they were paying, he said, the most attention to alum baking powder because that is the greatest evil before the world to-day. This philanthropic body was employing the most eminent chemists and lawyers to appear before the different, legislative bodies. But we never could find anybody who represented the Royal Baking Powder Company; no, heaven forbid. When we appeared before the Committee in New York, we found that Mr. Boardman, of the firm of Tracy, Boardman & Platt, was their attorney; we found Professor Chandler, of Columbia University, on their side. Professor Chandler was the 13-inch gun in that particular case. We presented our facts. We showed that in Massachusetts "disinterested" chemists had appeared, representing this National Health Society, and done all this good for philanthropic purposes. Mr. Boardman referring to us said it was an amazing and sad thing to see how this world was degenerating, how talent and ability could be hired for a salary to appear and advocate the poisoning of the people simply from sordid motives, and that he was astonished at the audacity and the weakness of anybody who would insist that alum baking powder was good, but far be that from his subject. One would sup-

pose he said this Royal Baking Powder Company was ubiquitous; one would suppose this question could never come up without being raised by the hand of the Royal Baking Powder Company; but he would call upon Professor Chandler to answer whether he was employed by any baking powder company. Well do I remember Professor Chandler's eloquent opening: "Gentlemen, chemists are proverbially poor; ever since the days of Shakespeare the lean and hungry apothecary has been the synonym of that profession, poor in pocket, while yet rich in intelligence and rich in experience and rich in opportunities to do good for their fellow men. Twenty years ago in my laboratory a gathering of eminent gentlemen were brought together. I find in this excellent bill to-day many of the words and definitions formulated there. This bill, or rather the basis of this bill, became the law of the State of New York, one of the best laws that has ever been enacted. It has been copied by other states, and I see this almost as a child of mine. I have never received, nor do I expect to receive any compensation from others on the pure food subject. It is necessary that the chemist do this for the people, and I am here for that purpose." Isn't that beautiful? We had insisted that the right of trial by jury had been won by the life-blood of the human race, and invited the bringing of a case in the courts, where cross-examination could take place, to ascertain whether our products were unwholesome or not. Mr. Boardman insisted that trial by jury was one of the weakest things possible, and that these matters should not be tried by a jury, but before this intelligent Senate Committee of the great State of New York. He said: "We are willing to submit *"our"* powders to such a test." He was then reminded that he had not mentioned the powders that he represented. The majority of the committee had a good and sufficient reason for being opposed to us, but he was asked: "Whom do you represent?" He answered: "I am here distinctly on a retainer." "Whom did you get the retainer from?" "Mr. Kelly," whose name has been mentioned, President of the National Health Society, engaged our Mr. Platt." Professor Chandler did not say anything more about being "disinterested," but after the hearing was over Professor McMurtrie of the Royal Baking Powder Company, whom I respect and esteem as a thoroughly good man, emerged from the darkness, and when we went to the depot we met Professor McMurtrie and Professor Chandler and Mr. Boardman congratulating themselves and each other. They had unanimously decided that alum baking powder was bad. That is a characteristic experience.

We feel that much of the discredit with which "expert testimony" is now regarded by judges, juries and the public is due to the ease with which these chemists under the flimsy cloak of

false philanthropy, can be induced to give testimony as disinterested, which is really partisan and paid for. They drag the great names of noble institutions in the mud by such conduct.

As soon as the committee report in New York state had gone to the floor of the Senate we had rallied to our support those people who could see through the thing and those people who had not been influenced, and in every case we killed off these bills. We have, of course, been charged with being against pure food legislation. We are not. We are in favor of it. Before I get through with this address you will find there is no body of men who are any more in favor of it, and there are plenty of men in this room who can substantiate what I am saying. We have fought consistently and intelligently and tried to meet the views of others who were trying to get pure food laws. Everybody knows that, who is familiar with this subject. There are few advocates who have done more for a national pure food law than we have.

To come back to Missouri. It was necessary to repeal that bill. In 1901 we tried to repeal it. Public sentiment was with us. The House passed the bill by a vote of 125 to 9. The bill was sent to the Senate and the then Lieutenant Governor, Lee, referred it to the Senate Committee on Criminal Jurisprudence of which James Orchard was chairman. We could not get the bill out of committee. We appealed to the House. The House passed a resolution condemning the chairman of that committee for not reporting the bill. We could not get a hearing. After the clock was set back ten minutes on the day of adjournment so that they might adjourn at the exact hour, in came the chairman of the committee with a report. The report was a terrible condemnation of alum baking powder. We subsequently learned that Senator William J. Stone, of the National Health Society, had taken the report and handed it to Mr. Lee and Mr. Lee had handed it to the chairman of the committee and the chairman had not even read it. Nevertheless it was published broadcast as the correct judgment of this committee. We thought something was wrong. We knew it. It was one thing to know a thing and another to prove it. Two years went by. Again we tried to repeal the bill. Again we were confronted by a majority of the Senate. It was then that one thousand dollar bills began to float around St. Louis. Men had them in their possession who had never had so much before at one time. Twelve of those bills have been traced to their source. Indictments have followed. Lee has turned state's evidence. He fled the country, came back again and finally confessed that he had been the recipient of bribe money and that he had distributed it. Kelley, of the Health Society, is living permanently abroad; he can never return. William Ziegler is under an un-

answered indictment for bribery. He will never come out here voluntarily to answer that indictment. Exposures followed. One of the leading magazines of the country has discussed this question in all its bearings, called a spade a spade, called names fearlessly, said exactly what it wanted to say about this scandal. There is no reply to that from the Royal Baking Powder Company, because it is the truth.

Gentleman, this controversy has come to a point where it is nearing its termination. We believe, and sincerely believe, that no legislative body will dare to pursue this disgraceful matter any further. Let me say that throughout this long controversy, from start to finish, we have been subject to investigation. The watchful eye, the hostile eye of the enemy has been constantly looking for some chance to put a finger on something wrong with us. We have been subjected to searching examinations by the very prosecuting attorneys who have been so merciless in crushing out boodie in this country; we have been subjected to every possible investigation, and we have come forth unscathed. We have conducted our fight in an honorable straightforward way. Our diplomacies have been fair diplomacies; our fight has been fair, honest, open and above board. When we have seen a head that was dishonest, we have hit it. We were like children in the wilderness. All we had was a cry, but you could hear that cry whenever people went arbitrarily wrong.

Now, I have to propose what I believe will be a complete evidence of our sincerity, and I think this is the proper place to propose it. We want standards fixed for baking powder; we want a high standard fixed and we will live up to it. We want a national pure food law. We propose to publicly commit ourselves to the following proposition; we will out-Herod Herod. We will place upon every can of baking powder the contents of the can; we will also place on the outside of the can the resulting substances left in the food, so that the people shall know exactly what they eat. We will advocate a law which says that any baking powder which leaves a harmful or deleterious substance in the food shall be declared adulterated within the meaning of that law, and we ask the Royal Baking Powder Company to meet us on that ground. We hereby ask them to join us and these commissioners and secure such a complete law. With our combined influence we ought to get such a food law as that. I know they are opposed to the fixing of standards. It is only recently they declared they had the right to make any kind of baking powder, 3 per cent strength, if they chose, that it was un-American to fix standards; they took the position before the United States Committee on Food Standards six months ago. I know they have fought every food bill that has gone down in Washington for the

last three years because they did not want to put on the can the statement that their powder left a residue of Rochelle salts. The gentleman whom you heard here, Mr. Mallet, did not want to state that the residue of cream of tartar baking powder was—Rochelle salts. Did you notice that? I am simply going to substantiate as far as I can our position. We want national pure food legislation. I want to reiterate what I have said, and again under the challenge that we will join the Royal Baking Powder Company and this congress in an effort to pass a national pure food law that contains the clause that the can shall be labelled, that it shall be labelled with the contents of the can; that it shall be labelled with the residue left in the food, and a clause saying that any baking powder leaving in the food any substance harmful or deleterious to health shall be regarded as an adulteration within the meaning of the law. When they come forward and co-operate for pure food legislation; when they abandon the manufacture of alum baking powder because their conscience troubles them, then we will listen to the testimony of their experts with a great deal more consideration. Their representatives are here. They are silent. I ask you to judge between us.

PROF. MALLET: Before we pass on to any further discussion I would like the opportunity of correcting one misstatement in Mr. Morrison's address. I do not suppose he would intentionally misrepresent me, but he has apparently done so. He has said that the Royal Baking Powder Company had induced the chemists, and I understood him then to refer to myself as the author of the paper that he speaks about, under that head, to change their opinions. Now I have never changed my opinion. I have never been appealed to to change my opinion, by the Royal Baking Powder Company or any other manufacturer of baking powder. I had taken exactly the position I take now before I had ever heard of this baking powder controversy, and before I had been in contact or communication with any representative of any baking powder company whatsoever. I have talked to my class in industrial chemistry exactly what I have said here, that alum as used in baking powder was not to be designated by such a term as poison, but that it was distinctly unwholesome.

MR. MORRISON: I want to state very gladly that Mr. Mallet was not included in that statement. It was made at a time prior to Mr. Mallet's entrance into this controversy in any way at all. I know the chemists to whom Mr. Ziegler referred and it did not include Mr. Mallet. I am very glad to state that.

CHAIRMAN BAILEY: We are certainly getting a good deal of light on the baking powder proposition. We will next have an address by

Professor Vaughn of the University of Michigan, on the same subject.

ADDRESS OF PROF. VICTOR C. VAUGHAN.  
*Mr. President and Gentlemen.*

The title of my paper is "The Effects of Aluminum and Its Salts on the Health of Man."

The question of the employment of alum in the preparation of bread and the effects of this metal on digestion and the health of man in general is a scientific one and should be discussed without prejudice. It is a problem that may be solved by experimental methods, and any scientific contribution to it should be critically examined and if found free from error should be accepted; on the other hand all fallacious work should be discarded and more exact scientific evidence demanded.

In presenting this short paper on the subject of the employment of alum baking powders in the preparation of bread, I will assume that alum baking powders are composed of soda alum, sodium bicarbonate, and starch and that the reaction resulting between the acid and alkaline salts leads to the formation of aluminum hydrate. I will not discuss the possibilities of an excess of either the acid or the alkaline salt and will assume that they are mixed in chemically equivalent proportions. With these assumptions, I will proceed to a brief discussion of certain well defined and pertinent questions.

(1) Has aluminum hydrate any retarding action on digestion?

Ruttan (Transactions of Royal Society of Canada, 1887) made numerous experiments along this line and concluded quite positively that the alum baking powders retard both proteo-pancreatic fluids to which 0.05 p. c. of one of the lytic and amylolytic digestion. In one set of experiments he employed salivary, peptic and powders, tartaric, phosphate and alum was added. "The materials to be digested consisted (1) a 1 p. c. solution of potato starch, made neutral by washing with large excess of water; (2) gluten obtained from gluten flour, thoroughly washed, separated as completely as possible from starch, and dried at 100 to 120 degrees; (3) fibrin separated from blood clot, washed with water, alcohol and ether, slowly dried at 100 degrees and reduced to a powder."

I will not quote any of Ruttan's figures, since they may be found in his paper. It may be stated, however, that he demonstrated that the alum powders had a markedly retarding action on digestion in every case.

On the other hand, Smith (New York Med. Jour., 1900) concludes from his experiments with test breakfasts of bread made with alum powders and controls with bread made with sodium bicarbonate and dilute hydrochloric acid that the use of alum baking powder does not retard di-

gestion. I will not quote Smith's figures, but refer those interested in the subject to his paper.

Whether aluminum hydrate has any retarding effect upon peptic digestion or not certainly can be determined experimentally and the conditions of the experiment are quite simple. The method of determining relative peptic digestion, as recommended by Mett, is now employed in nearly every clinical laboratory and is so easy of application and so convincing in its demonstration that it admits of no differences in opinion. Capillary glass tubes with a diameter of from 1 to 2 mm. are filled with white of egg and the contents coagulated by placing the tubes in hot water. The filled tubes are cut into pieces from 1 to 2 cm. long and placed in the digestive fluids to be tested and the relative activity of the fluids is determined by measurement of the length of the column digested. I have some of these tubes here and one has only to look at them in order to see that aluminum hydrate does retard digestion. Each Mett tube was kept in 40 C. C. of gastric juice for twenty-four hours. In three of these tubes marked "control" nothing was added to the gastric juice, and you can easily see that in all of these digestion has proceeded markedly. In the other tubes moist aluminum hydrate was mixed with the gastric juice. In one there was 0.2; in another 0.1, and in the third 0.05 gram aluminum hydrate, and you may see that in the first of these there was no digestion; in the second, there has been slight digestive activity and in the third it is more marked, but still much less than in any of the controls. This is a test that any physician or chemist may make and, as I have stated, the result is so striking that it must carry conviction. I have therefore no hesitancy in saying that aluminum hydrate does retard digestion. I have made some experiments with the peptic digestion of breads made with tartrate and alum powders. I bought at a grocer's small cans of two tartrate and three alum powders and asked my cook to take the same quantity of flour and make bread with each powder, following directions exactly.

This was done and portions of each bread subjected to portions of the same gastric juice for two hours at 38°C. At the expiration of this time each digesting mass was placed on a hard filter and the filtrate and washings of each diluted to the same volume. In the filtrate I estimated the ash, carbohydrate and proteid as follows: The carbohydrate was determined in an aliquot part by heating with dilute acids and titration with Fehling's solution. The ash was determined by evaporation and incineration. The proteid was estimated by the difference between the sum of the ash and carbohydrate subtracted from the total solids. In presenting the figures I have calculated the amounts per 100 parts of bread and have

taken the mean of the three alum baking powder breads and of the two tartrate. The figures are as follows:

|                          | Carbo- | Ash.  | hydrates. | Proteids. | Total. |
|--------------------------|--------|-------|-----------|-----------|--------|
| Alum bread . . . . .     | 1.379  | 6.518 | 4.603     | 12.500    |        |
| Tartrate bread . . . . . | 0.777  | 7.960 | 7.513     | 16.250    |        |

These figures indicate that the tartrate bread is acted upon more promptly and energetically by the gastric juice than the alum bread.

According to König the average amount of proteid in wheat bread is between 7 and 8 per cent. Supposing these breads contained 8 per cent of proteid, then in the tartrate bread 93.9 per cent of the proteid was digested; while in the alum bread only 57.5 per cent of the proteid was digested in two hours. It must be stated, however, that in the above given method of determining the proteid there is a small advantage given to the tartrate bread. This is in the estimation of the ash which is so small in the tartrate bread, because the organic salt is burned out in ignition. However, if the ash were the same in the two kinds of bread the more marked digestion of the tartrate bread would still be evident.

(2) Is aluminum hydrate soluble in digestive juices?

This is of greater importance than the first question, because if aluminum is soluble in the digestive juices it may be absorbed and may do more serious harm than that resulting from retardation of digestion. The most simple experiment may convince anyone that aluminum hydrate is quite soluble at 0.2 per cent hydrochloric acid and in like manner it may be shown that this substance is also soluble in gastric juice, either normal or artificial. I have made the following experiments on the solubility of aluminum hydrate:

(1) Eight-tenths of a gram of aluminum hydrate was mixed with 100 C. C. of artificial gastric juice and kept in the incubating room for two hours, after which it was filtered and the filtrate heated with hydrochloric acid and potassium chlorate until all organic matter was destroyed. The presence of aluminum hydrate was easily demonstrated.

(2) Placed .72 gram of aluminum hydrate in a solution of 1 gram of Witte's pepton in 100 C. C. of physiological salt solution and kept in the incubator for two hours, after which the preparation was filtered through hardened paper and the filtrate tested for aluminum after destruction of the organic matter with a positive result.

(3) Placed 0.8 gram of aluminum hydrate in 100 C. C. of a solution of egg albumen, allowed to stand for two hours in incubator, filtered through har-

dened paper and found aluminum in the filtrate after destruction of organic matter.

Controls in these experiments gave negative results showing that aluminum was not present in the reagents employed.

We must conclude that aluminum is dissolved to some extent at least in the stomach when taken with food.

(3) Is aluminum absorbed from the alimentary canal?

On this point I have made no experiments myself, but others have and the testimony seems quite conclusive. Mott found aluminum in considerable quantities in the blood and liver tissue of dogs to which aluminum hydrate had been administered and this finding was confirmed by Arnold. The latter states: "I fed a dog upon meat mixed with precipitated hydrate of alumina (containing much water); the amount of this hydrate of alumina given the dog was twelve ounces. I killed the animal, and examined the viscera. The duodenum was highly inflamed in its upper portion. The spleen and liver, upon analysis, showed the presence of a considerable quantity of alumina."

The irritative effects of the aluminum hydrate on mucous membrane of the upper intestines is explained by the fact that aluminum, like other corrosive metals, combines with proteids.

(4) Is absorbed aluminum harmful?

The work of Seim is so far as I know the only contribution to the toxicology of aluminum salts when injected subcutaneously. These investigations are so well known to all who have had occasion to study this subject that extended references to them is not necessary. The salt employed was a double lactate of aluminum and sodium. It was found that the injection of this salt into frogs in quantities of from 0.02 to 0.03 gram of aluminum hydrate caused death as a rule within from 10 to 24 hours, some animals, however, not dying until a few days had elapsed. I will not detail the symptoms further than to state that there is general paralysis of the nervous system, due to the action of the poison on the cord. The toxic action of the aluminum salt was demonstrated on rabbits, dogs and cats as well as frogs. Chronic, as well as acute poisoning was studied, and it is the chronic form in which we were most interested. As a rule the first symptoms was constipation, which just before death, was frequently followed by diarrhoea. Emaciation was accompanied by psychic depression, which in some instances deepened into apathy. Loss of coördination was a prominent symptom, and the temperature often fell much below the normal. Post mortem examination showed a swollen condition of the mucous membranes of the stomach and intestines and small ulcers were observed in some cases. Fatty degen-

eration in the cells of the liver and kidney was observed.

Evidently we must conclude from Seim's work that if soluble salts of aluminum reach the circulation they are toxic. But it is said that these investigations have no bearing on the employment of baking powders because there are many things that are poisonous when injected subcutaneously, but inert when given by the mouth. This caution is perfectly proper and it must be shown that alum is absorbed to some extent from the alimentary canal before the facts brought out in Seim's studies can be urged as objections to the use of alum baking powders in the preparation of bread. But as we have already seen there is positive and sufficient evidence that when aluminum hydrate is taken into the stomach it is in part at least absorbed and the metal can be found in the tissues, and furthermore it is shown that the reaction between the tissues and the absorbed metals leads to destructive changes in the tissue cells and consequent impairment of function.

I will now summarize the points, as they appear to me, of most importance in this discussion.

(1) In bread leavened with alum baking powders there is a considerable retardation of the digestion of proteids.

(2) Aluminum when taken into the stomach in the form of hydrate passes into solution more or less, being soluble in the acid of the gastric juice and in solutions of pepton and albumin.

(3) Aluminum when taken into the stomach is absorbed in part at least into the circulation and distributed to the various tissues of the body.

(4) The work of Siem is up to the present time the only trustworthy scientific contribution bearing upon the effect of salts of aluminum upon the cellular elements of the body and accepting this work we must conclude that the scientific evidence is against the employment of alum baking powders in the making of bread.

These tubes I have here I have been carrying in my pocket for several days, but I will leave them on the table and anyone can examine them. You understand that it is a little glass tube; this is put in glycerin so as to keep it. The glass tube is made for the purpose, just one inch long, and it is filled with egg albumen. That is coagulated and then put into the gastric juice, and this is one of the controls, and the extent of digestion may be compared to that tube in which aluminum hydrate was used, so that anybody by simply looking at these two tubes will see. The tubes, you understand, are both the same length, and the amount of peptic digestion may be seen. It proceeds from both ends of the tubes. In this one there is practically no digestion, while in that a considerable amount of digestion has taken place. There are other tubes here of the same kind, if anyone cares to look at them.

CHAIRMAN BAILEY: I am informed that Dr. E. E. Smith, Ph. D., of New York, has been given a place on the program, and with the consent of Prof. Scovell he will now take the floor.

ADDRESS OF E. E. SMITH, PH. D., M. D.

*Mr. Chairman and Gentlemen:*

This discussion has already lengthened out considerably, and only the importance of the questions at issue makes it seem desirable for me to ask your indulgence for a short time. I may say at the outset, as has already been told you, that I am one of a committee that was retained by the American Baking Powder Association to investigate the question of the wholesomeness or the unwholesomeness of the foods prepared by the use of the class of baking powders which they manufacture. As has already been stated, the interests of those manufacturers demanded that a truthful knowledge should be obtained by them as to the wholesomeness of such food. In the words of the attorney who first approached me upon the subject, the fate of this product must eventually be decided by its wholesomeness or unwholesomeness, and the sooner we learn the facts as they really are the better will the interests of our clients be served. I therefore undertook elaborate investigations that extended into some years, with the purpose and the one purpose only of learning the facts as they are. Had the work been unsatisfactory to the manufacturers, it is improbable that I would be asked to publicly present the results of the investigation. The fact that I am here to testify as to our findings is conclusive evidence in itself of the favorableness of those findings, as is also the fact that we were asked to assist in the legal struggles that have taken place since that time. The conflict would have probably avoided the scientific aspect of the subject and would have been waged along different lines. I know of no better language to express the scientific opinions we have formed of the wholesomeness of the food prepared by the use of these so-called alum baking powders than the language used by Judge Clark, in his opinion rendered in the Layton trial, which has already been told you.

It was first necessary to determine in what direction the investigation should be pursued, the character of the investigation. What was the nature of the injurious effect thought or claimed might be produced? How was definite knowledge of any particular way in which the product was injurious to be obtained? Unfavorable opinions expressed by scientific men were indefinite. Few, or no investigations were recorded of the unfavorable action of the food itself. The work done had been largely chemical and the vital issue of the physiological effect was assumed on insufficient grounds or none at all. We realized that the

final decision of the question rested, not with the test tube in the laboratory, but with the far more intricate action that takes place in the human organism, and we determined that our investigation would have to do, not with theories or deductions as to what ought to be expected, but with direct observation of what does occur when food prepared by these baking powders is consumed by human individuals. These, let me add, are the first studies of the physiological action of food prepared by the use of so-called alum baking powders. The results obtained were as follows:

First, that such food does not interfere with the normal secretion of the gastric juice in human beings.

Second, it does not retard the utilization by the human system of the full nutritive value of the food. By this I mean that the food is all digested and absorbed.

Third, that the small portion of baking powder residue is not absorbed by the system, but is eliminated with other waste materials through the lower bowels.

Fourth, that food prepared by the use of the so-called alum baking powders when fed to human beings in large amounts for considerable periods of time, four or five months, does not diminish the digestive power of the stomach, does not interfere with the power of the organism to normally digest and absorb food, and does not produce other deleterious effects as a result of the baking powder with which such food is made.

We are unable to find, after a most extensive and searching examination, that food prepared with so-called alum baking powder is any more injurious than any other good, wholesome food. Some minor investigations that could not be conducted on human subjects have been carried out on animals. They include the feeding of animals, such as rats and pigs, exclusively on baking powder food from birth to maturity and observing their rate of growth as compared with proper control animals fed the same amounts of food not made with alum baking powder; the investigations further include the analysis of the various organs of such baking powder fed animals with a view of learning if the aluminum in the residue has been absorbed and deposited in the organs and tissues. In all instances the results have been negative, confirming the opinion formed from the observations on human subjects that the baking powder foods are as wholesome and harmless as other foods.

I wish to call attention to the fact again, as I have already stated, that our investigations have to do, not with chemical substances that have been prepared for us to resemble some other substance supposed to exist, but we have taken the actual food itself that was made with this baking powder and conducted our investigations on that.

You will notice that in the paper presented by

Mr. Mallet, which, by the way, was an interesting review as has already been stated, of his work in 1888—you will remember that he called attention to the necessity of determining the particular compounds liable to be taken into the body under the condition of the consumption of such food. We feel and still maintain, that that point is not an issue, viz., as to what the composition of this substance is, but that the issue is, what is the action of the food itself, and I have a feeling that if scientific investigations were more physiological in their character and less chemical, and consequently if the results to be concluded were more directly obtained, that the results would be of quite a different character than those which have been reported by the papers that have been presented.

Now, another point to which Professor Mallet called attention in his remarks—I do not wish to take your time beyond all patience, but there are one or two things that deserve mention. He said that the pepsin was rendered insoluble in the solution that he obtained. How did he know that the pepsin was rendered insoluble? Simply because in that solution there was a precipitation of organic matter. Now, physiological chemists know that pepsin is an impure substance; it contains not only pepsin itself, but other organic matter which is necessary in order that the pepsin itself may be active. We don't know chemically very much about pepsin, but we know that in this solution there is some organic matter, that we recognize is not pepsin and that the pepsin is also present; and so when Professor Mallet got his precipitate of organic matter, he had no right to conclude that was pepsin. How about the other organic matter that is present? He does not distinguish that. I don't think a matter like this is vital to the issue, but it merely calls to your mind the opportunities of error.

He referred to the boron compounds and the position in the Mendelejeff system between boron and aluminum. There is a distinct difference between the boron compounds and the aluminum compounds. The difference is this: that the boron compounds are themselves absorbed, while the aluminum are not. It happened in this instance that I ran a series of investigations with the boron compounds in some of my experiments parallel with the aluminum compounds. I do not know just why I did, but I happened to have done it; perhaps because the boron compounds were attracting attention at Washington at that time and it was interesting to me; and the boron compounds did, as Mr. Mallet said, produce very marked effects—effects we did not get with aluminum compounds, for the reason that the aluminum compounds as they occur in bread are practically insoluble in water and in the digestive juices.

Professor Mallet also referred to the idiosyn-

crazy of various individuals. If we are going to pass laws to meet the idiosyncrasies of individuals, then, as you all know, we must cut out strawberries which are on the market; there are probably a hundred people that cannot eat strawberries to one that cannot eat good, wholesome bread prepared with baking powder. It seems to me, when we have to resort to such analogies to restrict manufacture, we are resorting to a rather far-fetched matter.

Professor Vaughn referred to the aluminum compounds, and in doing so he said: "Smith finds by his experiments on men" (referring to myself) "that the aluminum compounds do not retard digestion." I know that Professor Vaughn did not mean to misrepresent me, and I only wish he had read over my article a little more carefully. What I did say was that they did not retard the secretion of gastric juice in the stomach. I was not talking about the chemical process at all, but about the secretion of gastric juice in the stomach, and my statement was not that the compounds did not retard the digestion, but that they did not retard the secretion.

There is another thing that surprises me very much. I am surprised that Professor Vaughn should bring those tubes here, because in a minor experiment, which we considered of little importance, but which we reported, I made the experiment myself; and Mr. Vaughn, on the Layton trial, with a great deal of emphasis, pointed to the fact that when the albumen was in solution it was not digested; that it was not a proved fact that it had been transformed into peptones, and that the hydrochloric acid may have merely dissolved it, and to have him present the same thing to you in good faith to-day, after having criticized me, seems a little strange. (Laughter.)

Now I want to refer again, in closing, to the emphasis that it is necessary for me to place upon the study of this subject from a physiological point of view; they took aluminum hydroxide for their experiments, and I took the food itself for the subject of experiment, and experimented upon that, and drew my conclusions from that and I have been unable to find that alum baking powders have produced any deleterious action.

PROF. MALLET: I would like to ask the gentleman who has just spoken about a point in which he has misrepresented me. I understood him to say he objected to the evidence of the experiments as to pepsin being precipitated from the gastric juice—the artificial juice, it was in that case—because it went to show organic matter of some kind had been precipitated and was present. That was not the only way we determined that. The fact that the pepsin was actually removed was determined by taking the residuum of the food and taking a test of that.

PROF. VAUGHN: I simply want to speak

about these tubes. In the Layton trial Dr. Smith brought up some experiments, and he said that because the thing went into solution it was digested and converted into peptones; now here it is not even dissolved. There cannot be any question whether it is converted into peptones or not. The proteid in the tubes is not even dissolved. That is the point, though it is not very important. Now, there is one other thing I find Dr. Smith and I do not disagree about at all; we believe exactly the same thing. He says that the administration of the aluminum food did not diminish the flow of the gastric juice. I suppose if you would take many things into the stomach they would increase the flow of gastric juice, so that that is no proof that aluminum is absorbed or that it is not absorbed or anything about it. I infer from what you said that you agree with me perfectly that peptic digestion may be retarded.

DR. SMITH: Have you experimented along that line?

PROF. VAUGHN: Yes, I think we are together on that. There is just one other point, but just of scientific interest. There is a great deal of fuss sometimes made about experiments made on human beings. Now do you think those experiments are of as much value, really, as scientific experiments made upon the lower animals? Suppose you wanted to experiment upon alum baking powders or anything else, can you control the food of a man as you can control the food of an animal? Can you kill the man whenever you want to and analyze the kidneys and heart and liver and everything of that kind? Now, really, apart from any question of alum baking powders or anything of that kind, experiments upon men have never yet, so far as I can remember just now—I may be mistaken about this—been any substantial advance in medicine, because they are liable to so many errors. Pettencoffer drank the cholera cultures of the cholera germ and concluded it was not the cause of cholera. Coke in a more sensible way went to experimenting on animals and proved that the cholera germ is the cause of cholera. One school of medicine relies upon experiments on human beings and it has given us a series of vagaries and nothing else. Another school of medicine experiments upon animals and it has given us diphtheria anti-toxin, which has decreased the death rate of the world and blessed humanity. Now, which is the more valuable and which is the more scientific, to experiment upon animals or to experiment upon men? This is apart from any baking powder controversy.

Then there is another thing which Mr. Morrison referred to. I was asked in the Layton trial, and so was Mr. Mallet, and we both an-

swered the question as we did all questions, truthfully and to the best of our ability, whether we knew of any person whom we could say positively had been injured by eating alum baking powder food, and we said we couldn't. Now, does that amount to anything? Suppose that any number of learned physicians had been asked twenty years ago if they knew of any harm coming to any one from the bite of a mosquito, or of any disease being due to mosquito bites. They would have said, "No, the mosquito is an irritating little cuss, but he does not produce any deadly disease." But we now know that the mosquito gives us malaria and yellow fever, and so on, so that that is no proof. We simply answered the question honestly, as we did all questions. That is all I care to say.

DR. SMITH: I thought I heard everything that was stated in the original article, and I don't think that the fact was mentioned that the precipitate was shown by other tests to be pepsin. Possibly I am mistaken.

PROF. MALLET: I cannot speak from recollection, but I remember distinctly making that test.

DR. SMITH: It is to be regretted that it was not mentioned in the paper. As to experiments on men and animals, that is a very broad question, and the position that Professor Vaughn takes is rather unfavorable to the elaborate and expensive experiments that Professor Wiley has conducted on the subject of preservatives in Washington. I have not received the original bulletin yet, and I am not at all sure that those experiments will verify the position that human experiments are valuable. If they do maintain the position that the preliminary announcement makes, then I certainly must agree with Professor Wiley that experiments of that kind are of value, but I also agree with Professor Vaughn that experiments on men should be supplemented by experiments upon animals, and perhaps even experiments on animals should be given the first place. In our own investigations we conducted experiments on men and animals both, so as to cover the subject as fully and completely as possible.

President Bailey—We will now hear from Prof. M. A. Scovell, director Kentucky Experiment Station.

#### ADDRESS OF PROF. M. A. SCOVELL.

I do not know why I was called upon in connection with this controversy. I am afraid to try to settle the controversy. It has been very interesting, and now you can know some of the troubles and trials of the committee on standards, as they have taken up already this baking powder question, and the controversy has been before them at New York to some extent, and they are un-

able yet, as you will see, to decide even on a standard. I do not think the whole subject has been covered, although a great deal of extraneous matter has been brought forward which will be of benefit to all the members of this association. We like to hear all sides of a question, and even the facts about the court trials, though a great deal of that is, so far as we are concerned, of very little interest. The main question here is the effect upon the health. Now, there is a distinction between baking powders for that very reason. Alum is cheaper than cream of tartar, and when they make alum they should sell it cheaper. I think the manufacturer always sells it cheaper; the retailer sometimes does not, but claims it is a better powder or sells it for another one. I think the people should know just what the baking powder is made of. If it is alum, and you can prove the resultant is all right in bread, the people will use alum; if it is cream of tartar, and you prove the resultant is all right, rochelle salts, then the people can pay more and get that, if they want it. If it is alum phosphate, the people should know it. I do not propose to decide in any way, or to advise any commissioner what to do. The only thing I can tell is what we do in Kentucky, and what we shall do until we are still more enlightened on this question. I believe the alum baking powders should be labeled distinctly "Alum Baking Powder"; I believe the alum phosphate baking powders should be labeled "Alum Phosphate Baking Powder," and that the cream of tartar baking powders should be labeled "Cream of Tartar Baking Powder." I think this is the solution of that question at present. Then there is another thing I think should be done, and I do not know whether the manufacturers will agree to this or not, but sooner or later they must agree to it, and that is, that there must be a standard for the available carbonic acid. I think you will find that the committee that has this matter in charge will soon come to some conclusion on that. The only thing they are working for now is as to what that standard shall be. I don't think a baking powder that has been on the shelves for five or six years and has deteriorated should be sold as baking powder in any case. If the alum contains more carbonic acid than cream of tartar baking powder, the people should know it; if the phosphate contains less, the people should know it. We should have a standard for baking powder and everything should be labeled clearly and distinctly in this case as in all others, and I think the only way we can do it is to call the baking powders just what they are, and not from what the result will be after a test by baking. I may not have correctly understood Mr. Morrison, but I understood him to say that his companies would be willing to have a law providing certain things were done. Now, we are very glad, I think, as commis-

sioners, to have all the help we can; I think the American people are going to have a law sooner or later, anyway. It does not make any difference whether certain interests are concerned or not. If the American people feel they should have a law, they will have one, on pure foods. It may not be just, at first; it may have to be amended, and it may be some time before they will get it, but it must be made by the people, and not by any interest one way or the other—either the alum or the other baking powders, or any other interest, must have the real say-so in it. The way we are doing in Kentucky is the way I think the commissioners generally will do until this question has been settled thoroughly and well. The question of rochelle salts is one that must be taken up, as well as the one of aluminum hydrate in the final reaction, but until that time I think the only clear way, as I said before, is simply to label the powder just what it is made of, so that the people will know what they are buying, whether they are buying alum baking powder, what price it shall be, and not only that, but also, whether they want to eat it or not. That is all I have to say on this question.

MR. EMERY: I find myself in substantial agreement with what Mr. Scovell has said in regard to the baking powder matter. I have been required to administer in Wisconsin a law that was obtained by my predecessor, Mr. Adams, in 1897, and I want to tell you how he stated it was obtained. The question of alum was being discussed and he and Dr. Minton made up their minds they would get a bill passed by the legislature without the knowledge of either the alum men or the cream of tartar men or any other of the baking powder men, and he got it to his own satisfaction. I am to have a paper concerning a number of things about the Wisconsin Food Commission and I am going to read out of that paper one paragraph regarding this matter of baking powder.

"In 1897 a specific law on the subject of baking powder was enacted. This law requires that baking powder containing alum shall bear a label printed in black ink, in letters not smaller than brevier, heavy Gothic caps, with the name and address of the manufacturer and the words 'This baking powder contains alum.'"

Most of my life I have been a teacher. More than twenty years I have taught psychology in high schools and normal schools; but never in all my experience have I seen such unique phases of psychological phenomena displayed as in the mental states of certain manufacturers of alum baking powder made apparent by their efforts to meet the demands of this law. The law places no ban upon alum baking powder as to healthfulness. What it does is to recog-

nize that alum baking powder can be produced at lower cost than cream of tartar baking powder, and apparently intends that if the consumer wishes to use alum baking powder he shall be advised as to what it is, so that he may purchase it without being deceived.

Mr. Adams tells me that that is the exact purpose he had in preparing the bill.

MR. MCPHERSON: I would like to ask one question, and also to interject into it something that has not been spoken of. Out on the Pacific slope we have a number of baking powder concerns that make a baking powder that to my certain knowledge after twelve years on the shelves was perfect and good, and it does not contain a single atom of filler. These firms are prepared to prove that the baking powders of the American Baking Powder Association and the Trust are adulterated baking powders under the definition of impure foods, because they have in them starch, which does not add anything to the value of the baking powder and is considered an adulterant. Now, perhaps this may have a tendency to bring the alum baking powder people and the trust together, for if they do not fight this they will lose the Pacific slope. They have the baking powder trade because they are putting up an absolutely pure baking powder without any starch in it, and starch is not worth 25 to 50 cents a pound. Now, on the other hand, the ordinary baking powder is from 20 per cent to one-half, and in some cases as high as 70 per cent starch, and they are manufactured by people that are represented on this floor to-day. Is it necessary, in the first place, to put starch in baking powder?

Now, what I wished to say was this: I know Mr. Morrison and know him to be a gentleman. He came out to our state at the inception of the food law and they agreed all baking powder should be labeled just what it was. That is all any one asked, and after Mr. Morrison made this agreement, so far as he was concerned, it was kept, although some of it is not labeled, and the trust did the very same thing, and I think Mr. Scovell's idea is the correct one, that they ought to tell what is in their baking powder, and whether it contains starch, because starch is as much an adulterant as anything else, because we are prepared to prove we don't need it. Mr. Morrison says the starch pays for the advertising. I guess it does.

I can readily understand this, that the ingredients of baking powder combined in the carbon dioxide, carbonic acid created, will puff up the bread and it will be gone, we don't know where, and all there is left in the bread is one drop of glauber salts, which they use for physic-

ing horses, in the one case, and in the other case rochelle salts, which they use for physic-ing men. But what conditions must this be done under in order to generate that gas? You ask the housewife and she will tell you it takes kneading and punching and pulling and fixing and rolling and finally in putting it into the oven at a certain temperature. If that is not done you will have soggy bread. Now, why is the bread soggy? I can only reason that it is because the baking powder did not generate the gas, and if it did not generate the gas, where is the alum? Some people have told me the alum was left in the bread. I don't know whether it is or not, but I want to learn, and I wish some of you baking powder people would tell me what becomes of it, and if the same thing is not true of cream of tartar.

CHAIRMAN BAILEY: We have done well this afternoon, and the Secretary informs me that he thinks we can get along without an evening session.

Congress then adjourned to meet at 9:30 a. m. Friday, September 30, 1904.

Friday, September 30th.

Congress met pursuant to adjournment at 9:30 a. m.

CHAIRMAN BAILEY: We departed a little from the printed program yesterday on account of parties being here who wanted to take up the baking powder controversy, and we will now take up the regular program, which is somewhat lengthy.

MR. EMERY: As you have said, we have a long program, and I move now that we hold to the regular program until that program is completed, and if there are outside matters to come up that they be taken up after the regular program has been finished.

The motion was duly seconded and carried.

CHAIRMAN BAILEY: The first on the program for this morning is a paper by Dr. V. C. Price, to be read by A. C. Fischer, Secretary of the Price Flavoring Extract Company, Chicago.

#### ADDRESS OF DR. V. C. PRICE.

Mr. President, Members of the Association, Ladies and Gentlemen:

It is almost impossible—and I think those who know most of the work done, and to be done, will be readiest to agree with me—to say anything new in recommendation of the motives of this association, the promulgators of which have been actuated first, last and all the time by a determination to protect the public against the frauds perpetrated by manufacturers of food products.

However, as a food producer, having spent years in the study of food, having worked with zeal and energy in its scientific investigation, I feel that I may be pardoned if I take advantage of every opportunity offered me to applaud, as pub-

licly as possible, the efforts of the association in behalf of pure food laws. I feel it an honor to be invited to partake in a movement, which I do not scruple to call one of the most important of all those taking place in this country to-day. In looking over the records of the past meetings of this association, I have been surprised, astonished, at the singleness of aim, the one purpose, a desire to do the right thing and the best thing, which actuates every active member.

If eternal vigilance is the price of every good thing, no one need fear for the results. The good work will go on. It cannot be stopped.

The weight and importance attached to the testimony and judgment of the men who stand at the helm, investigating, probing, remedying, is really remarkable. Already food consumers have a sense of protection, and are fairly howling for the good things to come, while the food producer realizes that he is jeopardizing his reputation and his products, if by pseudo-science, fraud, or cold-blooded trickery, he attempts to defraud or victimize the public.

You should hew to the exact line, that those who spend the eight or nine hundred millions of dollars, said to be expended annually for food, may be protected. The public is entitled to protection, and the work this association is doing in the way of food laws, food standards, and proper labeling, is the safeguard it is throwing out to facilitate this protection.

I have been asked to speak to-day on the subject of "Flavoring Extracts," and, begging your indulgence for a few moments, will dwell particularly on the possibilities for their adulteration. Man's ingenuity is as active in the production of flavorings as any one other art. It requires skill and experience to produce first-class preparations—first-class in wholesomeness, strength and purity. Only the best materials can be used, and they must be employed by a person of sufficient intelligence, scientific and chemical knowledge, to insure their proper selection, proportions, menstruums, "ageing" and filtration. Of all the flavoring extracts now in the market, the two best known are vanilla and lemon.

The intelligent manufacturer of lemon extract recognizes the fact, that to the soil and climate of Sicily is due, to a large extent, the great value and rare excellence of the lemons from this country. In the manufacture of the best lemon extract, Sicilian lemons are employed, the peel only being used.

Many of the inferior extracts are made from oil extracted by distillation. The oil so obtained is colorless, inferior in quality, and cheaper in price, than that obtained by the cold, or hand process. By the latter process, it takes one thousand lemons and two days' hand labor to extract one pound of oil. From this oil, however, can be made a true extract, containing five per cent of pure oil of

lemon in deodorized spirits, colored by the peel, and containing no oil of turpentine.

As in the manufacture of other extracts, so with lemon, the desire for profit leads to the adulteration, not only of the extract, but the essential oil itself. Oils of citronella, lemon-grass, turpentine, distilled oil of limes, and white or Russian petroleum, are chief among the many foreign substances used to cheapen the cost of the oil of lemon. A large per cent of the oil of lemon on the market is produced synthetically, i. e., by mixing highly rectified turpentine with the citral obtained from lemon-grass.

Much of this inferior extract is lacking in color, and the old and ever present enemy, aniline, is resorted to.

As a solvent, wood alcohol is often used. This is a poison and is often deadly in its effect. Its use is the more reprehensible from the fact that scientific knowledge has made it possible to eliminate the disagreeable woody odor, and except by chemical analysis, its presence cannot be detected.

With vanilla, the queen of flavors, I repeat what I have already said, that for the best results, only the best materials can be used. There is no vanilla that has the delicacy of flavor, color, strength and lasting quality, as that made from the vanilla bean of Mexico, where it reaches the perfection most appreciated for its flavoring qualities. These beans should be selected with the utmost care, and by an experienced person, for they are not all alike. Premature cutting, careless handling, and improper curing will impair their value.

Just as soon as an inferior bean is used, then the manufacturer must resort to substitutions and admixtures in order to give to the extract the proper odor and color. The flavor and strength cannot be obtained except legitimately.

One of the substitutes largely used in place of the vanilla bean is the Tonka, a bean whose market value is several hundred per cent less than that of the Mexican vanilla bean. The Tonka bean is possessed of a new mown hay odor, and has been principally used in scenting snuff, tobacco and in perfumery, until used as a vanilla substitute. While it may not be, strictly speaking, poisonous, its proper use is as a scent, and not as an ingredient of a food product. It is employed solely with an eye to profit.

The matter of substitution is on the face of it reprehensible. One is equally justifiable in stealing one's purse, as knowingly to falsely represent an article of merchandise.

Another adulterant of vanilla in the market is vaniline. Vaniline, properly speaking, or the true vaniline, is the odoriferous principle of vanilla. It forms a crystalline efflorescence, the presence of which on a dark brown, or nearly black, pod, is

taken as a criterion of quality. The peculiar fragrance of vanilla is due to this vaniline.

But artificial vaniline has been placed upon the market. It was first artificially prepared by Tielman and Hermann in Germany, who obtained it from the sap of certain kinds of fir trees. Later Dr. C. R. Alder Wright prepared it from crude opium. Still later from asafoetida, and from a constituent oil of cloves, and lastly from coal tar. This was placed upon the market, ostensibly, to be used in the manufacture of perfumes. Very soon its possibilities as an adulterant in vanilla extract was discovered, and as a consequence, we have in the market to-day numerous brands of vanilla extract without containing any vanilla whatever. It is used in conjunction with Tonka, glycerine, orris root, prune juice and caramel. In several instances upon analysis, the vaniline was found adulterated with acetanilid, a practice not only dishonest but dangerous to health. Prof. Koch, who has analyzed the highest and cheapest grades of vanilla, has found in the latter, an oil liquid, which when brought in contact with the mucous membranes of the body, caused tremendous irritation, and affected the kidneys.

Poisons are mortgages on vital strength, and there are plenty of them a man knowingly takes into his stomach, without being the innocent victim of fraudulent methods of manufacturers of food products.

As a demand for an article of commerce increases, the desire to make quicker and larger profits tempts a manufacturer to use these substitutes and adulterants. The inducements for an increase of profits by substitution and adulteration, requires honest business courage to resist.

It is a pity that science should be prostituted to such use, but these are the devices, the tricks by which the public can be plundered for the benefit of the few. There should be a time limit to martyrdom, and if the good work of suppressing the evil of adulteration, misbranding, and substitution goes on, as I feel sure it will, in the hands of those who are so thoroughly equipped for the work, we will soon see the dawn of a golden era in the food world.

MR. MCPHERSON: I would like to ask a question of Mr. Fischer. What bean do you consider the best vanilla bean?

MR. FISCHER: The Mexican vanilla bean.

MR. MCPHERSON: Can you tell the relative value between the Bourbon, the Tahita and the vanilla bean?

MR. FISCHER: The Bourbon South American bean costs about half what the Mexican vanilla bean does; it costs about four or five dollars a pound, while the Mexican bean costs from ten to twelve dollars a pound, and the Tahita bean can be purchased on the market for 70 to 75 cents a pound.

MR. MCPHERSON: Are they as good as the Mexican bean?

MR. FISCHER: Oh, no.

MR. MCPHERSON: Why not?

MR. FISCHER: It is a matter of flavor, like tobacco, the Havana tobacco being considered the finest.

MR. MCPHERSON: Do you know anything about, or can you give us any information in regard to what is known as turpenless extracts of lemon?

MR. FISCHER: No, I know nothing about that.

MR. MCPHERSON: The reason I ask this is that in Idaho out of 62 tests, 34 did not show a trace of lemon oil at all.

MR. HOBBS: Is there anything you have worked out from the chemical side of it which will distinguish the different qualities of the beans?

MR. FISCHER: I could not go into a discussion of that matter because I know nothing about it; this is a paper written by the doctor himself, and he is unable to be present and I agreed to read it for him.

CHAIRMAN BAILEY: This was to be followed by a discussion by Prof. LaBach, but as he is not present I will call upon Prof. Ladd, whose address is on the subject of "Some Adulterations and Frauds in the Food Markets."

#### ADDRESS OF PROF E. F. LADD.

#### SOME ADULTERATIONS AND FRAUDS IN THE FOOD MARKETS.

In discussing the subject which has been assigned me, "Some Adulterations and Frauds in the Food Markets," it is not my purpose or desire to advertise the houses who manufacture these goods, but rather to point out some of the frauds which I have found to exist among food products and beverages offered for sale in North Dakota. In discussing the subject of adulteration and frauds, I shall do so from the standpoint as food commissioner for North Dakota and under the law as it exists in that state. There are three essential principles laid down in the law of the state:

First—The use of chemical preservatives, including saccharin is prohibited.

Second—The use of all coal tar colors is prohibited, as well as all other colors where their use is intended to abet deception and fraud.

Third—The label should tell the truth, or as our friends in South Dakota have said, "the label shall tell the truth, the whole truth and nothing but the truth."

All goods which do not comply with the requirements of this law, which it seems to me is a natural law, are necessarily classed as adulterated or misbranded, and therefore come well within the subject which has been assigned me for treat-

ment. There was hardly a product offered for sale in the state one year ago but what some brands were found to be adulterated, and in some instances the adulteration and fraud had become so general that it was well nigh impossible to find a pure product, as competition had practically driven the pure products from the state.

#### MEATS.

One might suppose that the meats offered for sale in the state would be generally pure and true to name, but while potted chicken and potted turkey are common products, I have never yet found a can in the state which really contained in determinable quantity either chicken or turkey. More than 90 per cent of the local markets in the state were using chemical preservatives and in nearly every butcher shop could be found a bottle of freezem, icem or preservaline. The amount of borax or boracic acid employed in these meats varied to considerable extent, and expressed in terms of boracic acid in sausages and Hamburger steak would probably range from 5 grains to 40 grains per pound, while the medical dose is from 5 to 9 grains per day. The use of these chemicals is not confined to the local butchers, scarcely a ham could be found that did not contain borax. In the dried beef, in the smoked meats, in the canned bacon, in the canned chipped beef, boracic acid or borates was a common ingredient. Certainly it cannot be said that the use of this preservative is necessary in goods sealed in glass and tin, whatever may be said with regard to their use in other classes of meats. Probably sodium sulphite is more generally used than any other preservative in sausages and hamburger steak by the local butchers. At times the meat which he employs in the preparation of these products has become badly tainted and the use of the sulphites helped him to dispose of these meats as ripened products.

Canned salmon was frequently found to contain borax and in varying quantity, and while many of the canners protested that they were not using borax, nevertheless, it was shown that the special salt, sold them for use, contained sufficient borax to act as a preservative agent. We quote from a letter of a prominent packer on the coast, "The analysis made by one of the packers in this city showed that your statement in regard to this borax was true, although the packer himself has never purchased an ounce of borax . . ." It was found that the salt contained the borax. This same class of salt has been sold to dairymen at a fancy price, with the statement that because it was so highly purified from foreign matter, the butter in which this salt was used would keep indefinitely.

#### FRENCH PEAS.

Ninety per cent of the so-called French peas which we have taken up in North Dakota were found to contain copper salts in varying quanti-

ties, and in a few samples in addition to the copper salts there was present aluminum salts. Inasmuch as we were unable to reach by letter a number of the alleged canners it is probably true that the majority of the samples examined were put up in this country.

#### MUSHROOMS.

Of all the canned mushrooms on the market in North Dakota 85 per cent were found to be bleached by the use of sulphites. Our examinations do not seem to show that any definite rule was followed by the canners of these goods with regard to the amount of sulphites used. In some instances the contents of the can proved to be nothing better than the discarded stems of mushrooms, but there was nothing to indicate this fact on the labels.

#### CATSUPS.

When the food law went into effect in North Dakota there was but one brand of catsup on sale in the state, so far as I am able to find by my records, which was pure, that is, free from chemical preservatives and coal tar coloring matters. Many of the catsups offered for sale in the state were made from the waste products from canners—pulp, skins, ripe tomatoes, green tomatoes, starch paste in considerable quantity, coal tar colors, chemical preservatives, usually benzoate of soda or salicylic acid, the whole highly spiced and not always free from saccharin. In other instances the basis for the catsup was largely pumpkin. I consider the use of starch paste in the manufacture of catsup as a fraud, and that its use should be condemned.

I have found tomatoes in cans with all appearances of being ripe, but in reality the cans were filled mainly with little aside from green tomatoes, tomato pulp and the whole colored with coal tar dye. In some cans less than 12 per cent of the contents failed to pass through a good grade of cheesecloth. The use of coloring matter, coal tar dyes, alone permitted of the practice of such frauds.

#### COCOA AND CHOCOLATE.

Of cocoas and chocolates examined about 70 per cent have been found to be adulterated. Until very recently not a sample marked as Premium Chocolate was found which did not contain from 10 to 90 per cent of foreign matter. At times the cheaper grade of this product would have some flavoring matter such as synthetic vanilla added to improve their quality. The better grades of the premium chocolates contained from 10 to 20 per cent of cereals. Some samples have been so badly adulterated that the beverage made from them would never be suspected of having been produced from the cocoa bean.

Of the sweet chocolates many of them were no better. The Elephant and the Daisy brands were among the worst found in the state, so bad in

fact that the manufacturers seemed ashamed to attach their name, and yet it would not be strange if these products could be traced back like many other food products which are badly adulterated, and without the name of the manufacturer, through some house which poses as a friend of pure foods. Our laws ought to make prohibitory the sale of any food product which did not bear the name of the manufacturer, or which bore a fictitious name, as is so often the case with goods of low grade. This leads me to consider certain goods bearing such names. A letter mailed to the Reliable Catsup Co. at Hamilton, Ohio, is sure to be returned to you. While the postmaster informs you that there is no such party or manufacturing establishment known in that city. I suppose from the nature of the product the manufacturers are ashamed to give their true name and address. Another instance of this kind is the Mineiska Packing Co., Mineiska, Minn. This is a little hamlet in Minnesota and the postmaster informs me that there is no packing company of any kind there, but the corn supposed to be packed under this label is bleached with sulphites and sweetened with saccharin. A letter addressed to the Quaker Extract Co., Chicago, is sure to be returned, and the extracts produced by them and sold in North Dakota, so far as I have found them are artificial products colored in imitation of the genuine article. The Western Maple Co. of St. Paul, Minn., is another concern, at one time in existence, but at the present time unknown to the postmaster in that city, nevertheless, their labels of the Ottawa brand of maple syrup are still used. The syrup sold under this label is a mixture of cane sugar and glucose. If we address the Kenwood Preserving Co., of Chicago, the letter is sure to be returned for lack of proper address, yet their goods have been very abundant in North Dakota. These are cases where manufacturers seem to be ashamed of the product which they are giving the public, and so prefer to hide the fraud under the name of some irresponsible concern, or cover them with fictitious names. This list might be largely multiplied, and in fact there are houses who are posing as friends of pure food, nevertheless, under some fictitious name are sending out goods in violation of the food laws of the northwest. Some of the biggest frauds have their headquarters in this city, and these include the manufacturers of various ciders which at the Chicago World's Fair won gold medals for the superior products produced. The Cherry cider, for instance, does not contain, so far as I am able to find, a single product which was ever in any way affiliated with the cherry tree. It is made of acids, flavored with chemicals, colored with coal tar dye, and chemically preserved. This product has been freely advertised and sold as one of the pure food products of the country.

While we are speaking of beverages, we might well consider the matter of Port wines, for there are a large number of these on the markets which are very far from being a desirable product, and in North Dakota there have been wines ranging all the way from products of the highest grade of purity to the imitation product made from cheap alcohol, colored with coal tar dye, preserved with salicylic acid, with added sugar for sweetness, sometimes containing saccharin, and with chemicals for flavor. These products have been sold at the drug stores, and presumably are not infrequently prescribed by the practitioner for some convalescent patient who requires the use of such a beverage in its purest form. The makers and sellers of these products should be behind the penitentiary bars rather than being permitted to parade before the public as respectable citizens, and to enter into competition with reputable manufacturers of wines and brandies whose goods in some sections have been entirely driven out of the market, being unable to meet the competition with these spurious articles.

#### JELLIES, JAMS AND PRESERVES.

To such an extent were the jellies, jams and preserves adulterated at the time the food law went into effect in North Dakota that the spurious articles had nearly driven the pure products from the market. Even the high grade products were colored with coal tar colors in order to appear as attractive as the spurious ones. In every grocery store were to be found currant jelly, raspberry jelly, strawberry jelly, etc., all made from the same products chemically preserved, colored with coal tar colors, sweetened with glucose, and the basis for the most of these products was glucose, and a jelly made from the waste products of apples. These jellies were all alike, except, in colors and chemicals used to give them a flavor. In some instances there was not even this difference, for the merchant was furnished with a stock of assorted labels in order that he might supply the popular demand at the time. So far as I have examined them every sample of jelly put up in pails and offered for sale in North Dakota was largely glucose and starch paste with a small amount of jelly made from the waste product of fruit. A cheap inferior grade of glucose it would seem must have been used, as the amount of sulphites present in the jelly, presumably from the glucose, was often excessive. In addition to this there was generally used considerable salicylic acid. All was colored with coal tar dye and flavored with various synthetic products. Sometimes tartaric acid, at other times citric acid was employed, and in some instances sulphuric acid was used in the preparation of these jellies.

Strawberry and raspberry jams are generally, in my experience, little more than the refuse products strained out in the preparation of the jelly

and are largely made up from seeds and fibrous matter with the addition of a little apple jelly as embedding material, the whole sweetened and colored to give resemblance to the real article. Some of the best brands of strawberries on the market are so highly colored with the coal tar dyes that they are objectionable in appearance, and in my experience their flavor is always injured by the presence of this product.

I maintain that if these products cannot be put on the market in a more presentable form, that the people of North Dakota would be benefited immeasurably if they were excluded from the market.

#### SYRUPS AND MOLASSES.

The majority of the syrups and molasses offered for sale in North Dakota under the name of Minnesota, Tennessee and Iowa surghum, drips, etc., have proved to be largely made up from cheap grades of molasses and a considerable proportion of glucose, ranging from 60 to 95 per cent.

Now, while I have no objection to *pure* glucose so far as my present knowledge goes in the subject, I do maintain, however, that we have to deal here with more than a commercial fraud, and it is the duty of the food commissioner in every state to help inform the public regarding the character of these products. I maintain that the duty of the food commissioner does not stop with the mere prosecution of the offending parties, but that he should use his influence and position for educating the public with regard to the healthfulness of food products which are known to contain preservatives and coloring matter or which are commercial frauds intended to filch from the consumer's pocket his hard-earned wages.

In this article I have not attempted to consider all of the frauds or instances of adulteration which have come under my notice during the past eighteen months, but rather to call attention to some of the more glaring cases. I would by no means have it understood that there were no products of these different brands of goods which were not pure, far from it. At the present time the great bulk of the goods offered for sale in North Dakota are without the use of coloring matter of any kind, chemical preservatives are used to but very slight extent, and the goods are generally labeled true to name.

MR. EMERY: Mr. Ladd, in your law do you have the colors named or simply grouped as harmful colors, or colors which deceive?

MR. LADD: All coal tar dyes and aniline dyes are prohibited by law; under another section, anything that would tend to deceive in the way of a color is prohibited.

CHAIRMAN BAILEY: I find on consulting the program that I have overlooked one paper here prepared by Dr. Hobbs. It appears at the bottom of the page, and I took it for grant-

ed that this matter of extracts was finished, but we will now have Mr. Hobbs' paper on "The Adulteration of Flavoring Extracts."

MR. HOBBS: Mr. Chairman, and Members of the Congress—It really is due on my part to offer something of an apology to you for coming here and presenting a paper which is not strictly confined to the subject. I was away from home when Mr. Ankeny sent me a notice that I was to appear here, and I wrote to him about getting together the facts specifically setting forth what we should do in our paper, and he told me if I was not prepared to produce a scientific paper on this subject to take up anything that would do us good, and I have done so, and my apology comes as your due. I will say, however, that the flavoring extract industry in the State of Ohio is in better shape by far than it has ever been to my personal knowledge. We have had the co-operation of large houses there, which are manufacturing largely their own goods, and we have so won their good will, if we may flatter ourselves to that extent, that at any time we can go into their laboratories, inspect their books and get what information we may desire. The knowledge we have obtained in this way we have, of course, kept to ourselves to a large extent. I think I can say truthfully that I believe the reputable houses manufacturing in the state of Ohio use the same methods that outside manufacturers of good reputation employ; those have led the market, and they put upon the market goods which they are willing to publish to the world. We have a long line of spurious goods, which are cheap, found along the Ohio River very largely and sent out to small dealers and consumers, but I do not wish my remarks to be applied to the high-class manufacturers which we have in our state. I know our best houses are importing their own oils and bringing them in and taking them out of the custom house under the regulations there. The adulterations which we have found are in the smaller lines of goods, but in the better class, those which are forging ahead and coming upon the market, I believe they are made entirely in accordance with the requirements, except perhaps in the matter of coloring.

ADDRESS OF PROF. P. L. HOBBS.

#### THE ADULTERATION OF FLAVORING EXTRACTS.

I am sorry that I am called upon to present for your consideration one of the worst features of food violation which comes under our notice, and one which, for brazen fraud and willful perpetration of deceit, has hardly an equal.

The whole cry of those who carry on this traffic is, "That the public demand it and the public

must be satisfied," and the poor public must bear the responsibility.

It is immaterial if the package contains a 15 per cent alcohol solution and not enough of the oil of lemon to estimate and a little coloring matter added, so long as the public is hoodwinked and the profits accrue.

The market in this line is in very bad shape and our examination of it shows certain lines of lemon extract or essence, containing the necessary U. S. P. strength of oil, but without any additional coloring matter. Then again some manufacturers are using coloring matter, and from the 5 per cent oil strength it dwindles down until the oil content becomes too small to estimate. All are alike brilliant in cartons and guarantees to the consumer, setting forth their IXL or XXX strength and purity.

I have selected the lemon first because it is as bad as any, if not the worst.

The Ohio statutes call for U. S. P. standards, when the product is found therein and if this is to be maintained on this commodity, I firmly believe there is scarcely a single brand upon the market which conforms to it, and so all are infringers of the law. How then is the commodity to be treated; all can loosely conform to the law if the coloring matter is eliminated, but to color all of this product by the use of the lemon peel is obviously very difficult and expensive and as a matter of fact it does not materially add to its intrinsic value; and the preparation would answer the purpose just as well if it was eliminated entirely, and no one would be injured in the least as far as the applicability of the compound is concerned. But the U. S. P. demands it and by law it must be conformed with, and the common sense of the matter says it is nonsense when made for this purpose and the statutes might as well say that all butter *must* be colored and allow no license.

Considering the incorporation of color in goods not made up in accordance with the U. S. P. the question naturally arises, "Why is it done?" Some say to make it more pleasing to the eye; but I dare say that there is not one purchaser in one hundred who considers this, unless his attention has been specifically called to it by the seller. But few of us believe this is the motive, however, and the one suggested is, "That it is incorporated to make it appear like some other article of established reputation and so for the purpose of fraud.

Brands are coming upon the market free from foreign color and their sale is not restricted in consequence thereof; so I am told by the producers and marketers of the goods.

Referring to the color question again and from another side, namely, that the coloring matter may or may not be harmless.

What are you going to do to refute this harmless theory, when new colors are continually appearing upon the market, and it is impossible to identify many of these by the usual color reactions, for they are compounds, and the amount derived from a 2 ounce bottle is so insignificant that the proposition is ridiculous in the extreme; and then if we were compelled to elaborate on our investigations to the extent indicated to absolutely identify them, an army of chemists would be necessary.

The whole question of coloring such products as are under consideration can be reduced to one of two propositions.

First. Imitation of some well established article upon the market.

Second. To conceal inferiority, which is the sequence of the first proposition.

Both of these propositions have but one aim and that is to deceive the purchaser. Very few of us are hoodwinked by the claims of those who are putting out the so-called Terpenless lemon oil compounds and the subject needs scarcely more than a remark to the effect that there is nothing in it at all except a large gain to the producer and with less value to the consumer.

So much for the spirits of lemon, extract of lemon, essence of lemon or ticture of lemon; for the Department in Ohio finds that these four nouns are used synonymously and interchangeably in the U. S. P. and consequently one applies to all, and the question may well be asked, "Are you going to prohibit the sale of these articles, if they do not conform to the U. S. P.?" and the reply would be "That they certainly would be, unless otherwise labeled."

In taking this subject as we have and basing the standard on the U. S. P., we have not done so for the sake of argument or selection, but are forced to by the laws which make it obligatory, and we do not offer this as in strict commendation of that standard, for its inconsistencies and absurdities are too well known to us; but this much can be said, any standard is a good one until a better one is elected. We do not wish to pose as an exponent of the fact that if a 40 per cent alcohol will do all the work of solution, we should demand an 80 per cent, simply because it is demanded in U. S. P.; but we do assume that as long as a specific statute is not in force, then the U. S. P. standards are far superior to no standards at all. One large manufacturer came to us to talk the matter over and his final request was to have established any equitable standard and then stick to it and publish it so we can all know where we are.

We cannot deny that a state standard could be framed which would fulfill all requirements much better, but in the absence of such a law, our general statute will cover. Whether artificial color-

ing matter would be allowed or not would be a very grave question, for its incorporation is not necessary and its effect may be extremely harmful and open the door to nefarious traffic; and if it is permissible in one line of food, why not in many and so the evil grows and its limits are unknown and is eternally working injury and evil to all.

Going now to the vanilla compounds, we must confess we are almost lost for the many difficulties that surround the subject and render the goods, even when prepared under the directions laid down in the U. S. P., compounds of very wide differences, owing to the quality of the beans used.

Sophistications in imitation of the U. S. P. standards may be easily detected in many cases, but again it would seem that specific law could be passed, which should describe the products and give necessary standard factors, such as the per cent of vannilin and some such factors which could be established.

With all of those compounds such as winter-green, peppermint, sassafras, etc., the same general argument would hold as in the case of lemon, and deviations from those standards to be indicated upon the labels.

We have not found that methyl alcohol is used to any considerable extent in the preparation of this line of compounds.

In the use of synthetical, aromatic principles or flavoring solutions, it would seem, but just that the words "Extract, Essence, Tincture," etc., should be strictly prohibited, as it is erroneous, and it is a statement which is fraudulent in its intent, and filled only with the idea of deceit.

What is needed more seriously than anything else are specific statutes which shall set forth standards and such regulations as are wise, proficient and equitable, and such measures will be hailed with satisfaction both by the distributors and manufacturers and also the consuming public.

These matters are easily fixed and equitably adjusted, and when once established they should be drawn in such a manner that there will be no ambiguity.

Where the products are compounded under general formulae these methods should be covered and the limits of the important factors fixed.

The greatest need the department feels is for original investigation on products of known history and concerning the origin of which there is no doubt whatever, for unfortunately we find many reports of such investigations and that our own work, upon products taken by ourselves and our inspectors, vary so widely that it surrounds the publications with doubt.

As the function of our department is of a police nature, as well as of a general bureau of information, it becomes necessary to have our data in hand, so that it will stand "The rough and tumble" of the cross-examination.

The greatest needs we have are "standards" and our invocations went out that Dr. Wiley would be successful in his work last winter, and Ohio would then have followed almost before the ink was dry upon the records and have had to-day statutes which would have remedied much of our trouble.

In the formulation of these standards, a great deal of original work should be done on the different products of each state and the value of this class of work is obvious, such as milk, cheese, cider, vinegar, wines, etc., and very astonishing results would be discovered and many a haze wiped away from the public eye. Appropriations should be asked for for this specific purpose and publication of the results and the work should be entrusted to as competent persons as are possible to obtain.

What is the result of most of the activity in the departments?

It is to prevent fraud and prosecute the evil-doers; and the consequence is that our records are full of cases and decisions but if the departments were searched for analyses of pure products taken in such a manner as to assure a product of known history; few if any records could be shown; and as each administration dies, the record closes, and not a single asset of scientific value remains behind and each new incumbent must gather together his facts for himself.

If all the states were engaged in lines of such thought, what a mass of most valuable information could be accumulated.

We are producing thousands of tons of grapes and still do not know the analysis of their juice. We are making large amounts of wine and have but little idea of its analysis, and so on through a long category of products.

Speaking of state inspection. Only a short time ago a certain law was passed relative to the cheese industries of our own state and I am loth to acknowledge that though the dairy and food departments had been in existence for over eighteen years, that it could produce no results, showing what the Ohio cheese actually should be in fat content.

And Ohio is not alone in this predicament.

And I do not produce this for the sake of criticism, not in the least, for the whole energies of the state have been bent more to the side of its police function, and that alone has kept it busy, as I have said.

I do not wish to have you thing for one moment that I am finding fault, or bringing criticism to bear upon the department; for it is not my intent. I do, however, wish to urge *that more work be done along these lines and that it be made a matter of publication.*

The main reason it has not been done with us is that such a work is necessarily slow, laborious and expensive, and the rush of work and demands

in other lines is too great; but its value is great and certainly enduring.

To show the necessities of the acquirement of such knowledge, a fact came to our notice in the condemnation of a certain line of maple syrup, in our market; and many and violent were the protestations of innocence and purity of the goods. But it did not move us. They produced reports of analysis of their goods made by one of the chemists attached to the department in a neighboring state, in which this same brand was held up as an emblem of purity and published as such.

We were still unmoved and pushed the case.

Then came threats and a virtual ejection of the agent from our office.

There then appeared upon the scene one of the firm, who had come on from New York; who apologized profusely; wanted to settle the matter; acknowledged the syrup was not strictly pure, and further said that the agent's action was entirely unwarranted and assured us that they had never put one pound of strictly pure goods upon the market in any part of the country; and as they did not want to change the quality of the goods, which suited the public, they changed their label to conform with the facts.

Further, now the analysis in the report of our sister state agreed with ours almost exactly and the feature of the incident is: that the chemist had accepted the goods as pure and as it had a fine maple flavor, etc., it was passed as pure. He simply did not know what maple syrup should analyze.

This incident is simply used to show the value of such a line of work, as above suggested, would be, to every one engaged in it, and what a vast amount of work it would save.

The great "Panacea" for all the ailments of our food adulterations would be, Allow no unwholesome goods and make the package carry a true statement of fact relative to the composition and purity of the goods and anything upon the package which deceived or intended to deceive the purchaser would be a breach of the law and subject to its penalty.

There is still one other condition, which is unfortunately in our line, in Ohio, and that is subjecting the commissions to public election and for the short period of two years.

A blacksmith, a carpenter, a saloonkeeper, all of whom may be men well founded and adapted to their various pursuits; are as eligible to the election to the office as the ablest lawyer, physician, or scientifically educated man; and when the best of men require several years to become conversant with duties and demands of their office, and will become much more valuable adjuncts to the state as the term of service continues, his tenure of office ceases and the state must educate another man.

Those of us who have received a scientific education well know and realize that our capital increases with our years, if our activity continues, and the efficiency of the department is vested in the man at the helm.

We have one magnificent example of the continuance of an able man in office and how he has built it up, studied its needs and forced a fulfillment of his conceptions, until now it has become one of the most important factors of the state and developed from a mere auxiliary of very little importance.

He will continue to strengthen it as long as his service lasts.

What could be accomplished with the individual states if a like condition could be brought about and of what enormous importance would our departments become?

Increasing their efficient police functions by able laws, broadening their general knowledge of the needs of their individual states and adding, yearly, a large amount of scientific knowledge to the world's library of such information.

MR. PATTERSON: I would like to ask Mr. Hobbs a question regarding the maple syrup product of his state. Where there is a small percentage of cane syrup interjected, is it hard to determine what proportion of cane syrup is in the pure maple syrup?

MR. HOBBS: It certainly is, and in many cases it is impossible. We have never in the state of Ohio tried to judge those which contained not enough to warrant us in turning the sample down.

MR. PATTERSON: Of course, some manufacturers say where a small proportion of cane syrup is used it is hard to determine what percentage it is.

MR. HOBBS: They are right in their position, but I will say that the same position holds in milk and every other food product.

CHAIRMAN BAILEY: Mr. McDonald was to discuss Mr. Ladd's paper, but as he is down for an address this afternoon he prefers to reserve his paper until then and discuss it in connection with his other address.

MR. McDONALD: I was not in when Prof. Ladd read his paper, but there is one question I would like to ask in regard to my action in the state of Washington. After the standard had been adopted by the Department of Agriculture in regard to condensed milk, 70 per cent solids and 27 per cent butter fat, I made an investigation of the condensed milk that was being sold in the state of Washington and was very much surprised to find that nearly all the samples ran a little below the standard, and some of them very much below; in fact, so much below the standard that some of them contained not more than four per cent of butter fat and from 20 to 22 per cent of solids.

In making that investigation, I found that there was coloring matter in one of the condensed milks and that was the first knowledge I had that the coloring matter known as annatto was used in condensed milk at all. After making that discovery, I notified the manufacturer that the product could not be sold in the state of Washington. I believed that was my duty, as other manufacturers in our own state were not using any coloring matter and their product did not have the appearance of richness which this product had, while it contained a larger per cent of solids and a smaller per cent of butter fat. I got myself into a hornet's nest and things got rather hot in Washington and we are not through with that fight yet. Unfortunately, it came up before I came on here and I have not had time to bring it up. I propose, however, when I return to Washington, to bring it up, and if that manufacturer continues to ship condensed milk into Washington containing coloring matter, to seize the entire lot and make a test case. Now, there may be some of the commissioners of other states who have had more experience than I have had who could give me a little advice on the matter and tell me about where I stand. I would like to make a winning fight and I don't want to start until I know what position to take, because it hurts the work to lose a case. I believe I am right, and if any person can inform me on that I would like it very much.

MR. MCPHERSON: I would like to supplement that by asking another question: I believe it is true in nearly all the states where cream is defined, as in our state, that it should have 18 per cent of butter fat. I have been investigating condensed milk, and none of them will go over ten per cent, and the question has been in my mind, have I the right to compel them to brand it "condensed milk" and not "cream," as the law defines cream as containing 18 per cent butter fat?

CHAIRMAN BAILEY: Is there any one prepared to answer those questions? If so, I would like to hear from them. If not, we will pass on to a paper by Mr. V. L. Price, of the National Confectioners' Association, on "Purity in Confectionery."

MR. PRICE: I have been selected to appear before you by the National Confectioners' Association of the United States. It has 300 active members, distributed all over the United States.

#### ADDRESS OF VINCENT L. PRICE.

#### NATIONAL CONFECTIONERS' ASSOCIATION ON PURITY IN CONFECTIONERY.

In speaking for the National Confectioners' Association I wish to impress upon you that it represents the largest manufacturing confectioners of

the United States, whose output represents three hundred million pounds of candy a year.

The present high standard of confectionery made in the United States to-day is due to the conscientious work of this association, an organization at present embracing in its membership over three hundred confectioners. The association was formed in 1884 for the purpose of advancing the standard of confectionery in all practicable ways and to absolutely prevent hurtful adulterations. Previous to its existence some harmful adulterants were being used, and though this association has for twenty years prevented the use of all harmful ingredients in confections, the prejudice occasioned by early misdeeds still exists, and most unjustly so.

The duties of the executive committee of this association are to promptly investigate all charges made in writing and properly supported, against an individual, firm or corporation in the United States, believed to be guilty of using terra alba or any other mineral substance, or any poisonous or hurtful color or ingredient in the manufacture of confectionery, and if such charges seem to be substantiated they shall prosecute the same whether against members of the association or other persons and shall, if possible, bring the offenders to punishment and public exposure.

To make this work effective the association provides the services of a competent chemist whose duty it is to analyze samples sent in by members or others interested in the promotion of purity in confectionery. The association has further emphasized its determination to prevent harmful adulterations by offering a reward of one hundred (\$100) dollars to any one producing evidence upon which the association shall be enabled to obtain a conviction against any person, firm or corporation for the adulteration of candy with poisonous or injurious substances, the association assuming the cost and responsibility of prosecuting the offender.

That the prosecution might be possible and that definitely defined laws would exist on which the prosecution could be based, the members and officers determined to encourage the passing of laws in the various states, prohibiting the use of harmful adulterations in confectionery, and through this work laws practically uniform have been passed in thirty-four (34) states and the District of Columbia. Seven other states have pure food or pure candy laws more or less satisfactory to the National Confectioners' Association. Four states, namely, Colorado, Texas, West Virginia and Nebraska have not appropriate legislation on the subject.

At each meeting of the Pure Food Congress in Washington the association has enjoyed the distinction of being accorded the largest number of delegates of any similar association. Those who have listened to their arguments are aware that

they were there for the purpose of having established a national law which would define most distinctly what should constitute harmful adulterations of confectionery and in each national pure food bill presented to the Congress and Senate of the United States there has been for this purpose a separate clause for confectionery.

A national pure food law that would as nearly as practical harmonize with the various state laws has been advocated and supported and at their recent annual convention it was provided that a special committee be appointed by the president to consist of one member in each of the states represented in the membership of the association, thirty in number, said committee to be known as a committee on national pure food legislation and to cooperate with the executive committee of the association in memorializing the United States Senate and by direct appeal to the senators of their respective states to aid in bringing to the knowledge of the Senate the representative character of the National Confectioners' Association and its interests and wishes as to the passage of the "Hepburn-McCumber" bill at the next session of the United States Senate.

#### COLORS IN CONFECTIONERY.

In 1889 the National Confectioners' Association at great expense and outlay of valuable time on the part of its members and with conscientious motive unbiased by commercial necessities, prepared a pamphlet on "Colors in Confectionery," which should set the standard for the use of colors by its members and others interested in the establishment of purity in confectionery. This pamphlet plainly setting forth the following facts:

First. That coal tar colors are specially adapted to the wants of confectioners on account of their brilliancy, permanency and high coloring power, by reason of which last named quality but infinitesimal amounts of color need be or can be used to give the desired effects.

Second. That there is no evidence to show that any poisonous or hurtful colorings have in recent years been found in confectionery.

Third. That while the exceedingly small proportions of color used in confectionery constitute a practical safeguard to the public health, confectioners are in duty bound to provide against all possible contingencies of harm by using the utmost care in obtaining absolutely non-poisonous colors, buying only from color dealers of established reputation and unquestioned responsibility, whose colors are tested at frequent intervals and are vouched for by competent chemists, and that a guarantee be put upon each package of color by the maker of dealer stating not only that the contents are non-poisonous but also that they will not in any way interfere with digestion or injure health.

Fourth. Any illegitimate use of coloring matter

in confectionery as a substitute for chocolate or any other material or ingredient for the purpose of adding bulk or increasing the weight of the confectionery in which it is incorporated is not to be permitted or countenanced.

Fifth. That color dealers furnishing colors to confectioners must publish printed lists of their colors under the various names and titles by which they are known and offered for sale, accompanying such lists with ample certifications by competent chemists as to their purity and suitability for coloring confectionery and other article of food. They must also attach to each package or other container of color a guarantee that it does not contain anything injurious to health.

It therefore follows that if confectioners buy their colors exclusively from reputable and responsible dealers and if dealers attach a guarantee to each package or other container of color required, the question of determining where to get absolutely non-injurious colors is fully answered, providing dealers in color be held to a strict accountability under their guarantees. If at any time it should appear necessary and advisable the National Confectioners' Association lends its aid to their enforcement.

#### REPORTS OF STATE FOOD COMMISSIONERS.

In reviewing the reports of food commissioners for the year 1903, I note that the commissioner from Illinois states in regard to colors, "that some coal tar colors are known to be poisonous in themselves, some are poisonous owing to metallic impurity introduced into their preparation and others are admittedly harmless." This is most true and has been long appreciated by the National Confectioners' Association, which is evidenced by my remarks in regard to their work and instructions to their members in the pamphlet, "Colors in Confectionery," which I have previously quoted from. This pamphlet points out to the confectioners of the United States how they can distinguish between those coal tar or aniline colors that are poisonous to use in themselves, those that are poisonous to use owing to metallic impurities introduced and those which are admittedly harmless. The latter I have every reason to believe are being intelligently used by the confectioners of the United States. The reports of the analysis of various state chemists going to prove this fact.

The statement of the same commissioner that it depends upon the chemist and food commissioners to recognize and prohibit the use of dyes that are deleterious as used in confectionery, but such radical actions as have been taken by certain commissioners on the subject of colors are not only evidences of the lack of their impractical knowledge of the uses of colors in confectionery, but may do a great injury to an industry that stands at the head for conscientious effort toward the en-

actment of laws guaranteeing purity in its products.

The National Confectioners' Association has never been on record as having opposed any just effort toward the abolishment of the use of any ingredient deleterious or detrimental to health, but it does and will oppose any action whereby the use of harmless colors essential to its industry are prohibited simply because they happen to come under a general heading with other colors that when used in confectionery are poisonous and injurious.

The commissioner from Illinois suggests more explicit laws than are now on the statutes defining deleterious colors. As far as the use of colors in confectionery is concerned, the laws of thirty-four states provide that colors that are poisonous as used in confectionery shall not be used. Therefore it seems to me that the action to be taken should be to provide laws whereby the maker of or dealer in colors for food products should be controlled and be made to guarantee the harmlessness of his colors, which guarantee should not be given without proper consideration of their uses and the law in question.

I note with pleasure that the commissioner from Illinois further reports the absence of terra alba, barytes, talc and other mineral compounds in the analysis made during his year's work.

The ordinary physiological tests of colors are often of no significance when applied to the problem of the admissibility of colors used only in infinitesimal amounts in the coloring of candies. Frequently therefore colors can be admitted here as being perfectly safe when otherwise this would be impossible. Thus the French law prohibits the use of certain colors for foods, but however further states expressly that "exceptionally it is permitted to use same for coloring candy, tablets, etc."

It is therefore reasonable to require the physiological tests of colors used in confectionery should be made with due consideration of the circumstances involved, and the chemist or physiologist should know how much coloring substance is used per pound or per 100 pounds of confectionery. Only on the basis thereof have physiological tests any significance, as far as confectionery is concerned, and while, as the French law states, certain colors administered in appreciable quantities have undesirable physiological effects and should, therefore, be ruled out, yet exception is very reasonably made in case these same coloring matters are used in such small amounts that no physiological effect can be expected to result.

In this connection I might explain the use of various aniline colors in confectionery by confectioners. In gum work, one of the most common and cheapest kinds of colored candy, the colors are obtained by making a solution of 1 pound of color and one gallon of water and of this solution but one-half to one ounce is used to color one hundred

pounds of candy. This reduces the actual amount of color used in a pound of colored gum work to such an infinitesimal amount that it is absolutely harmless.

In cream work, marshmallow work, hard boiled candies, even less color is used besides the fact that most candies are sold in assorted colors and flavors and the assortments generally contain at least twenty-ve per cent uncolored candy.

Red and black are the two colors most used in brilliant coloring and these can be obtained from cochineal and vegetable carbons.

#### OPPORTUNITIES OF FRAUD.

The opportunities of fraud in the confectionery industry are limited for it has been admitted that confectionery is not definable by any definite combination of ingredients, it may consist of sugar, glucose, starch, nuts, fruits, chocolates, colors, flavors and any wholesome ingredient. Pure wholesome candies are sold at such prices that imitations and frauds are impossible except by the use of harmful ingredients prohibited by law.

#### INJUSTICE OF THE PRESS.

The many prejudices existing in the minds of consumers against candy are due to the injustice of the press. Article after article has appeared year after year with flashing headlines "Poisoned by Eating Candy" and after prompt, impartial and rigid investigation of each case there has yet to be found one single instance of death or poisoning from eating candy, and yet with all this evidence the articles continue to appear and have their ill effects on the unknowing public.

If ever the calcium light of impartial truth was cast upon a subject for the benefit of its readers by a newspaper, it was done when in its issue of March 13th the New York World made the amende honorable to the confectionary trade in the matter of previously printed story of a candy poisoning case. This investigation of the World into the purity of confectionery by the analysis of a large number of samples is notable as being the first instance on record in which a newspaper devoted an effort to sift to the bottom and get at the exact truth of a report of a death from eating candy.

The eminent chemist employed by the World in its incisive search for the facts, Dr. Ernest J. Lederle has, as he states, analyzed in the past fifteen years, more than 10,000 samples of confectionery and in no case found anything poisonous in them. In this and other statements made in his report to the newspaper he has done much to reassure the public.

From candy stores all over Manhattan the World obtained samples to determine whether or not children in the public schools were being sold confections that were poisonous or injurious to their health.

The World procured from shops in the vicinity of the public schools twenty-eight samples of can-

dy. All of them were highly colored and every tint in the rainbow was represented. All of these specimens were turned over to Dr. Ernest J. Lederle, late president of the Board of Health, for chemical analysis, who stated that the samples of candy submitted to him for examination were examined for the following injurious ingredients, with negative results:

Salts of barium, arsenic, antimony, tin, lead, copper, mercury, zinc, cadmium, terra alba and mineral admixtures generally.

Dr. Lederle also stated that from official investigations made during the past fifteen years he was of the opinion that nearly all candies sold in New York City were free from poison and with very few exceptions not injurious to health. He has investigated many cases where children were supposed to have been poisoned by eating candy and in none of them had the facts borne out the suspicion.

The World has done a service to the entire confectionery trade and set an example to many of its contemporaries who are generally too prone to make much of "candy poisoning" yarns and too unwilling to admit their reckless injury to a representative American industry when, as always, such articles are proven to have no foundation in fact.

It may be interesting for me to quote some of the newspaper articles in various parts of the country and the results of investigations. The Chicago Chronicle lately printed an article boldly headed "Poisoned Candy Kills Boy." Upon investigation by the National Confectioners' Association it was found that the death was caused by eating a preparation of sugar syrup and rat poison, which had been used by a neighbor for killing rats and roaches.

The St. Paul Press comes out in bold type, "Eats Candy and Dies." This article was also published in Minneapolis and Mankato papers. After thorough investigation by J. G. Foster of the State Dairy and Food Commission it was found that the child had been poisoned by tin foil from a tobacco bag that had accidentally gotten into the bag of candy the child had purchased.

The New York Journal published an article headed "Poison in Candy Kills a Child, Two Others Ill." This case was thoroughly investigated and brought information from the secretary of New York City Department of Health that the candies had been examined and nothing of poisonous or injurious nature found in them.

I have laid stress upon this matter because I have been led to believe by the remarks of several prominent state and dairy food commissioners and legislators that they have been influenced by these articles and believed them to be true.

The annual proceedings of the National Confectioners' Association cite case after case with

similar results and I would advise all those interested to secure copies of these proceedings from me that more detail may be obtained of the association's work and the "Injustice of the Press."

Gentlemen, with such an organization conscientiously supported by its members, constantly working for purity in its productions and the establishment of definite laws preventing harmful adulterations, there is but one result, "Purity" and that is the association's emblem.

Has any other industry an organization as ready and willing to co-operate with legislators in the establishment of right laws presenting the adulteration of its products? There may be individuals who are sincere in their efforts and conscientious in what they produce, but in the National Confectioners' Association you have the whole industry.

There are some manufacturing confectioners in the United States that are not members of the National Confectioners' Association, yet we have yet to find any who have not been influenced by the association's good work and who do not appreciate and obey its ideas of purity.

CHAIRMAN BAILEY: What would be the result if coloring matter was ruled out of candy altogether, especially coal tar coloring?

MR. PRICE: Well, if you ruled out coal tar colors you would practically rule out all colors, because in the last three or four years individual manufacturers and the association have been making attempts to use vegetable colors. We don't want to use coal tar colors because they are cheaper, because, as I have said, the association acts together, and if one manufacturer starts using vegetable colors the others will do it. But we have not found any vegetable colors that will color candy. You can color it in small quantities by using a large amount, but the colors are not lasting; they fade out, so it is impossible to use them.

CHAIRMAN BAILEY: Don't you contemplate the time will come when all this fight against coal tar colors will be taken up? I know this question has been put to me dozens of times, "Why don't you rule against coal tar colors in candies, as they have taken it up in other lines?"

PROF. HORTVET: As to the finding of chrome yellow in candies, I believe I have been misunderstood. I will say that I was referring to historical facts, not to any results of my own analyses.

MR. PRICE: I have understood that the sentiment of the commissioners is that the use of harmless colors is not to be objected to if they are not used for the purpose of defrauding the public. The use of coal tar colors is regrettable, as Professor Ladd says, but color in confectionery does not tend to defraud the public. I do not know any color that is used for the

purpose of injecting any flavor or anything else.

MR. MCPHERSON: Do you use paraffine wax in the manufacture of gum drops?

MR. PRICE: No, sir; gum drops are manufactured in various ways. The cheaper products of gum drops are not on the market now as much as they used to be.

MR. MCPHERSON: Is paraffine wax used at all?

MR. PRICE: Yes, it is used by some manufacturers; for instance, they take a brown color and use the paraffine. It also has been used in caramels to some extent.

MR. MCPHERSON: Do you know of any such thing as chocolate paste being made and colored with brown umber?

MR. PRICE: No, I don't. The reason we have ruled out chocolate colors is because they are used to imitate chocolate. Some are harmless, some are poisonous, but all chocolate colors that are practicable to be used have to be used in such large quantities that they really add to the bulk of the goods. Where chocolate colors are used we don't refer to it as chocolate at all. It is simply a part of an assortment that is not referred to by name.

MR. PATTERSON: Some confectioners use English walnuts on the cakes of different candies. Have you ever found any difficulty with that?

MR. PRICE: Yes, we have. When we put them out at all, we do so with the understanding that the buyer buys them at his risk, and if they become wormy he has no right to sell them to his customer, and he buys them with that understanding.

MR. PATTERSON: Of course, children who buy candy are not presumed to know what effect these things will have upon them. We had a case in our department last summer which was a very serious matter, and I just wondered if there was anything injurious about it.

MR. PRICE: There is nothing injurious about walnut.

MR. PATTERSON: In this case the kernel became so saturated that it was practically all worms and naturally made the children sick, and on investigation we found that was the trouble.

MR. PRICE: Now, gentlemen, I want to impress upon you the fact that the National Confectioners' Association is organized purposely to prevent the use of harmful adulterations or harmful ingredients of any kind. I will not say they are not being used, but we are making an effort to stop it and we are helping the state food commissioners to do everything they can. I don't think there is any other association in the United States doing this work. We have

a chemist and we work every year at our meeting to show our members where they are wrong and we are just as willing to prosecute our members as we are any one else. There may be individual manufacturers that stand for purity and try to do what is right, but we have got our whole industry practically interested in our work.

CHAIRMAN BAILEY: So far all the papers have contemplated the question of food and drinks. The next subject on the program is that of drinks pure and simple—that is, it is simple because it is pure, and the first is an address by Sir W. Gilbey, of London, England.

#### ADDRESS OF SIR W. GILBEY.

##### THE PURITY OF POTABLE SPIRITS.

*Gentlemen:*

We appreciate the honor of being asked to read a paper before this convention on the Purity of Wines and Spirits, but find it impossible in the short time at our disposal to discuss such a very large subject in its entirety; we can, at all events, make an attempt to point out how genuine spirits are adulterated, and how substitutes are constantly used to eke them out.

By the art of substitution an adulterated article is often passed off as genuine. In some instances it is a scientific and technical advance, as, for example, when the substitute is not prejudicial to health. When the article is accurately described and the public made aware of its nature without being deliberately misled, then it may be said that substitutes are supplying a want, and in many instances are an honest attempt to meet a demand for cheaper goods.

On the other hand, the distributor is subjected to a strong temptation to furnish an article which is not of the nature, substance and quality demanded; yet it may be so similar in character as not to be easily distinguished from the real thing.

This practice is often further encouraged by the increasing difficulties of detecting the fraud. The law which has been established since 1879 in England to control the sale of foods and drugs has fairly safeguarded the interests of the consumer; yet from time to time it has required strengthening, and it is doubtful if the public are at present sufficiently protected against the subtleties of the adulterator.

The Sale of Food and Drugs Act in England, although successful in a measure, has proved in many instances to be insufficient. This was shown very clearly during the outbreak of the epidemic of arsenical poisoning from beer in the Midlands in 1900, due to the contamination of the beer with arsenical glucose. So far it has failed to protect the public against the fraud of misdescription as applied to beverages, and more particularly in respect to wines and spirits.

In no department of trade are there such op-

portunities for dishonest practices as are offered in the preparation of these liquids. Not only may the public be deceived in quality, but, in some instances, goods may be offered that are positively injurious to the consumer. The serious nature of these delinquencies demands our most strenuous efforts to provide the consumer with a clue by which he may recognize that which is genuine, especially so in the case of spirit.

It is generally known that the origin of potable spirits is sugar. This sugar sometimes is supplied directly by natural agencies. Thus brandy is the spirit distilled from wine made from grapes. Rum is the product of the sugar-cane; the sweetness which is present in the grape juice and in the infusion of the sugar-cane requires only the presence of a ferment to convert the saccharin into alcohol.

Whisky originally was exclusively made from malted barley. Barley, unlike the sugar-cane, consists principally of a starchy material devoid of all sweetness. Not until the seed begins to germinate does any change occur; nature then provides suitable food, in the form of sugar, for the young shoot to feed upon until such time as it is able to draw its nourishment from the earth.

The moisture of the ground, combined with the heat of the sun, set up a very complex action in the interior of the barley-corn. While the young shoot is pushing its way through the grain to reach the light, and the rootlets are forming to dig their way into the soil, a peculiar substance, or enzyme, is formed, which is known to the chemist as diastase. Its properties are to resolve the starch which the grain contains into sugar, in order to nourish the growth described. Already we have reminded you that the presence of sugar is an essential for the production of spirit.

The brewer and distiller avail themselves of this wonderful transformation which occurs during the germination of grain, producing it artificially by the method known to them as malting. This process, as many of you are aware, is conducted by steeping the grain in water for a number of hours, in a vessel or cistern technically known as a couch. Here it swells by absorbing from fifteen to thirty per cent of water, when it shows signs of germination. The surplus water is then drawn away. This done, the barley is placed in heaps on the floor of the malting-house, where it spontaneously generates heat, which assists the growth of the rootlets and the transformation described above. Here the maltster determines the moment to spread the germinating grain over the floor of the malthouse, exposing it to air and light, thus checking the growth of the acrospires and rootlets. When the germination has proceeded sufficiently to convert the starch into sugar, which the experienced maltster

recognizes by the length and appearance of the rudimentary stems, the grain or malt is at once removed to the malt-kiln, when all further growth is arrested by the heat. The nature of the fuel used in drying the germinated barley imparts to it a character and flavor which gives it a distinctive quality. Thus the anthracite and peat used in Scotland for that purpose—particularly the peat—gives the specially delicious flavor remarkable in Scotch malt whisky.

The chemical changes which have thus been effected may be briefly described as changing the azotised substances into diastase, and the conversion of the starch present into grape sugar, by the action of the diastase already formed, whilst coloring and flavor are imparted by the heat of the kiln.

When malted barley is crushed and infused in hot water (technically called "mashing"), the liquid drawn from this constitutes the sweet wort known to the brewer. This liquid, when fermented, becomes the ale used by the Scotch distiller, which he converts into whisky by means of a primitive still called a "pot still."

In former years, no other method was known of producing the wholesome beverage known as fine old malt whisky. It was only when an inquiring mind discovered that when diastase is produced in barley in the process of malting, the barley yields more diastase than is necessary for the conversion of the starch present, that this excess was found to exercise the same properties of converting starch into sugar as it did in the grain in which it is formed. Consequently, nearly all other bodies containing starch, such as unmalted grain and other farinaceous materials, can be acted on by the diastase, and these starchy bodies could readily be converted into sugar if they were introduced into the mash-tun with a small quantity of malted barley.

Here was a means of producing an unlimited quantity of fermentable material without incurring the costly process of malting, and, further, it could be used for converting sugar in substances which are not capable of being malted. What a scope for economy this opened up for the unscrupulous trader!

Doubtless, at first, large quantities of spirit were thus produced without any of the wholesome and agreeable qualities yielded by the all-malt whiskies of the Scotch distillers, the produce of the pot still. Frequent redistillations and rectifications were tried to remove these objectionable characteristics with only partial success, whilst a spirit was produced devoid of that full but delicate flavor for which the all-malt productions were celebrated.

Not until 1831 was any marked progress made in manufacturing cheaply a spirit free from those predominating objectionable flavors which were

the yield of unmalted and mixed materials. Æneas Coffey, of the Dock Distillery, Dublin, at the above date introduced his patent still, which, in one operation produced a spirit quite equal, if not superior, to numberless redistillations then practiced to produce a tasteless neutral spirit.

This system of producing continuously alcohol in a concentrated form effects great economies in its manufacture, particularly as it is capable of separating a nearly tasteless spirit from almost any source. So efficiently does this apparatus do its work that even the expert cannot with certainty distinguish from what material the neutral spirit has been produced.

Whisky, when first produced, was obtained by the simplest method of distillation possible. When the English went to Ireland under Henry II, they found that the Irish at that time drank whisky. An illustration, in a work dated 1651, by Dr. French, shows a pot still for the production of "aqua vitæ" out of beer, which is essentially the same as now in use by the Scotch distiller.

The pot still is a simple vessel, heated by a fire below, entirely closed in except for an outlet at the top which communicates with the worm or condenser, in which the vapor of the volatilized alcohol is condensed.

The vessel having been charged with wash (which is an infusion of malted barley which has been allowed to ferment), the heat separates the spirit present, mixed with watery vapor, and the volatile matters possessed by the mother liquor. These are condensed in the worm, producing a spirit possessing the full flavor which, when matured by age, gives the qualities so much appreciated by the consumer. Thus it will be observed the use of the pot still, combined with the flavoring which only malted barley can yield, produces the only liquid which can be correctly described as whisky, which accords with the productions previous to the introduction of the patent or Coffey still.

We have thus reached another step in the classification of whisky. To be genuine not only should it be exclusively produced from malted barley, but manufactured by the use of the *pot still*. Genuine Irish whisky, produced by the best makers in Dublin, is only derived from the pot still, and is distinguished from Scotch whisky by the introduction of a small quantity of grain in the mash-tun during the process of manufacture. Doubtless this imparts a flavor which distinguishes the Irish whisky from Scotch, the latter possessing a flavor recognizable by the use of peat for drying the malt when over the kiln.

Since the era of the patent still the word "whisky" has been applied to all spirit, whether it is produced from the finest malted barley or the outcome of mixed grain and other materials, the yield of the patent still, which is known to be

equal to producing a tasteless spirit from almost any ingredients.

In a word, "whisky" has become a generic term meaning spirits derived from malt, grain, roots, or any other material, however distilled, either by pot or patent still.

This fact has led the way to a large amount of dishonest trading, by misrepresentation, all over the world. This practice can only be controlled by the state insisting on precise definitions being given relating to the history of the spirit produced, by compelling the distributor to accurately label the full particulars of its origin.

Just as we should prefer to see the word "whisky" restricted to a spirit distilled exclusively from barley malt in a pot still, so also would we have "brandy" to mean, as it exclusively meant in history, the spirit distilled from the wine of the grape in a pot still.

An analogy here would seem to logically sustain this position. Butter was known long to the world before margarine, and the word "butter" therefore had a specific meaning, and however good and wholesome margarine may be, it remains a butter substitute and not butter; and any one selling margarine as butter would meet the deserts of a person committing a fraud and uttering a misdescription.

Brandy (*i. e.*, genuine grape spirit) and whisky (*i. e.*, genuine all-malt spirit) were similarly known to the world long before patent spirit; and, however harmless patent spirit may be held to be, it remains a substitute for real brandy or whisky, and to pass off patent spirit, or a mixture of patent spirit and whisky or brandy, as genuine brandy or whisky is as much an offense against honesty as selling margarine for butter. Yet legislation provides a remedy for the latter case and not for the former.

As we have said, however, it is to be feared that the words "whisky" and probably "brandy" must be yielded as generic terms, in which case it remains for legislation to insist upon these terms being unmistakably qualified according to the origin of the spirit. In a bill which it is proposed shortly to introduce into the English parliament the following is the memorandum:

"The object of this bill is to secure to purchasers of whisky a clear statement whether it is a whisky made from barley malt alone, or is in part a spirit made from unmalted grain in a pot still, or whether it contains an addition of German or patent still spirit. To carry out this object, the bill proposes to enact that all whisky shall, from the time of leaving the distillery till sold to the consumer, be described by a mark or label on the cask or bottle as 'malt whisky' or 'grain whisky,' or 'added spirit,' as the case may be. Provision is made for similar information being given to persons purchasing whisky on draught."

Under the existing law the inland revenue is furnished with returns of the materials used in each distillation, and they have, by means of the permits or certificates required on the removal of spirits and the stock-books required to be kept by rectifiers, dealers and retailers, the information necessary for tracing the whisky till it reaches the retailer. Power to prosecute for offenses against the bill is therefore given to officers of inland revenue, but persons authorized by local authorities having the execution of the laws relating to food and drugs are also to have power to prosecute and are to be supplied by the inland revenue with the information necessary for that purpose.

It must be admitted that the question as regards legislation is not free from difficulties; but, after all, the matter is reduced to the simplest terms when it is resolved merely to demand that "things should be what they seem," that the label on the cask, bottle or other container should be an honest description, and that the government should take strong, and, as they need only be, simple measures which shall insure to the public the *bona fides* of that description. The control could be absolute, seeing that every drop of spirit must come under the supervision of the excise authorities. As it is, they must know what frauds are daily perpetrated upon the public, and if the government are the people's representatives—nay, the people themselves—it may very naturally be asked why, in the name of all that is logical, do they allow themselves to be so deceived?

One of the evil results of the introduction of patent spirit has been the placing upon the market of immature spirit. Patent still spirit is necessarily much milder to the palate, if it possesses any taste at all, than the raw pot still product, and does not undergo any appreciable change by ageing; though, of course, it may become flavored by absorbing adventitious matters in the casks in which it is stored. In fact, there is little in patent still spirit to undergo that agreeable change brought about by age in pot still spirit. When the rectifying process is accurately conducted, the spirit, as it leaves the still, is both featureless and tasteless. Sometimes the purification is intentionally neglected in order that the spirit may retain some odor and some flavor resembling genuine pot still malt spirit.

In the south of Scotland and in Ireland patent still spirit is so prepared that it is not absolutely silent or "clean," as is German patent spirit. It is then "grain whisky," which will improve with the aid of the sherry cask. It is sold sometimes blended and sometimes unblended, under innumerable descriptions, all of which imply genuine malt whisky.

As is well known, all-malt whisky is not suitable for consumption until it has been toned and

improved by age, and when an all-malt whisky is soft and smooth to the palate that is in itself a proof of its age. There may be no such proof in the case of patent still spirit. The semblance of age is given to "blends" by mixing patent still spirit with all-malt spirit in proportions varying from ten to fifty times its volume, and such blends are sold as pure malt whisky. The cost of production of such blends, especially when German patent spirit is used, is obviously considerably less than that of real all-malt whisky, and the loss entailed in keeping all-malt whisky for maturing purpose is avoided. The difference in price between pot still and patent still spirit is very great, pot still spirit being nearly four times as expensive as patent still spirit.

The question arises whether the legislature might not impose an age limit on all spirits intended for consumption. Certainly all-malt spirit must be well matured before it can be regarded as suitable for drinking purposes; but, on the other hand, silent spirit does not perceptibly improve by age, neither is it at any time as wholesome as well-matured, genuine malt spirit. The peculiar bodies which give agreeable flavor to all-malt whiskies are so modified by the ageing process as to be converted from disagreeable substances into actually beneficial compounds. This applies also, but to a very small extent, to grain whiskies or blends. The great advantage to the blender of dealing in grains is that the spirit requires but a tithe of the storing that an all-malt spirit does. The real truth is that the raw principles of a young all-malt spirit are simply attenuated by adding featureless spirit. This cannot be regarded as an equivalent of the favorable influences brought about by several years' storage in cask.

In this matter, again, it would be an undoubted advantage to the community if the government could insist upon detaining all spirit for a certain number of years in the bonded warehouses. At any rate, one very great benefit of such a minimum being insisted upon would be to reduce the unfair opportunities which the dealer in patent spirit enjoys. He would then be compelled to store his spirit, instead of being able to send it straight away from the still to the consumer.

Lastly, this paper would not be complete without a reference to the recent proceedings which have been successfully taken in England, under the Sale of Food and Drugs Act, against the sale of spurious brandy. In the *Lancet*, of November 29, 1902, appeared the Report of a Special Commission upon Brandy and Its Adulterations. In this report it was shown that genuine brandy exhibited a composition widely different from spirit obtained from sources other than the grape, and, in particular, it was shown that the stimulating action of brandy, for which it is largely used in medicine, depended upon the rich proportion of ethers which the genuine article contains.

Public analysts in the country were not long in finding, in the analytical details of this report, a means of differentiating pure grape brandy from mixtures of brandy and patent spirit, and the first prosecution case, which took place in Glasgow in 1903, was successful. Similar proceedings were instituted elsewhere, but the great test case took place in London in April, 1904, which resulted in obtaining a conviction after a very long trial, in which a number of expert witnesses gave evidence. The prosecution was based on the small amount of ethers contained in the sample. It was contended for the defense that chemical analysis did not offer a means of differentiating brandy from plain spirit. However, in the course of the defense, one witness admitted that the sample in question was actually a blend of plain spirit with grape spirit. This result has had far-reaching consequences for the trade, and many retailers now have been forced to announce to their customers that they cannot guarantee the brandy sold by them to be entirely grape spirit.

We are told that English analysts are at present engaged in the analysis of whisky, with a view of turning it to account in discriminating between pure malt spirit, part malt spirit and patent still spirit. There seems little question that analysis easily decides between a pot still and a patent still spirit. Previous to the successful prosecutions just narrated public analysts had only given their attention to the question of the alcoholic strength of liquors, a minimum for which is provided by the statute; but there is no doubt that for long a great number of samples of whisky and brandy had been reported genuine which in reality were mixtures of or possibly consisted almost entirely of plain spirit. In this connection it is interesting to note that the local government board, in 1885, reported: "It is satisfactory, however, to find that water is the only adulterant employed."

We have felt very keenly that very strenuous steps should be taken to keep the trade in wines and spirits honest, and to protect the public against fraud. Failing legislation, we have consistently adopted the policy, since our firm was founded, of describing accurately on the label of all bottles the nature of the contents, and we know that this policy has been very widely appreciated by the public. We still hope, however, that private individual enterprise in this direction will be encouraged by our legislators, and that eventually we may possess a statute which is calculated to wipe away the reproach that things are not what they seem. All we ask is that the article purchased shall be of the nature, quality and substance demanded by the purchaser, and for an honest label.

We have in this paper only alluded to some of the adulterations of spirits, although we are fully alive to wine sophistication. In a short paper like this, controlled by a time limit, it is impossible

to find space to treat so large a theme as the manipulations of wines. We trust, however, on some future occasion, to fully discuss the question of "wine adulteration."

W. & A. GILBEY.

London, Aug. 26, 1902.

CHAIRMAN BAILEY: We will now listen to an address by Mr. T. Percy Morgan, President of the California Wine Association.

ADDRESS BY PERCY T. MORGAN, PRESIDENT  
OF THE CALIFORNIA WINE ASS'N.

#### PURITY AND ADULTERATION IN NATIVE WINES.

In speaking to the subject assigned to me by the committee it may not be amiss to give a short historical sketch of grape culture and wine-making in the United States, in order to demonstrate the importance of the native wine industry and the necessity for its protection from spurious or adulterated products.

Almost five centuries before the discovery by Columbus of the American continent early Scandinavian navigators visited the eastern shores of what are now the United States, and, finding grapes growing in great abundance, named the country "Vinland."

Wines were produced in considerable quantities from native grapes in Florida as far back as 1564, according to the testimony of Sir John Hawkins. Amadas and Barlowe, who visited North Carolina in 1584, were so impressed with the luxuriance of the growth of vines that one of them wrote that he found the land "so full of grapes" that "I think in all the world the like abundance is not to be found."

During the French occupation of Louisiana history records that the wine production reached such proportions that the government, becoming alarmed for its domestic trade, forbade its manufacture in the colony.

About 1630 the "London Company" sent French vigneron to Virginia to cultivate imported vines, Lord Delaware having enthusiastically recommended the experiment.

Almost all the early attempts at viticulture were directed to the introduction of vines from Europe, until Nicholas Longworth, who might be called the "father of the native wine industry," in 1850, after experimenting with foreign varieties along the Ohio river for thirty years, gave up the attempt to grow them, and remarked:

"If we intend cultivating the grape for wine we must rely only on our native grapes and new varieties arising from their seed."

Mr. Downey, in 1851, also stated in the *Horticulturist* that,

"The introduction of European vines into America for cultivation on a large scale is im-

possible. There is first a season or two of promise and then a complete failure."

When the above testimony was given, the Pacific Slope was practically an unknown country, having only recently become part of the United States. The gentlemen above quoted were, therefore, unaware that vines from Spain were successfully introduced into Mexico in the sixteenth century, and that when Franciscan monks, under Father Junipero Serra, established in 1768 the first California mission at San Diego, they brought with them cuttings of the *Vitis Vinifera*, from which they propagated the Mission grape, pioneer of the California wine industry.

It was not until the early '40's that the wine industry in the eastern and southern states commenced to assume commercial proportions, though Volney testifies to having tasted, in 1796, wine made at Gallipolis, Ohio, and there are records to show that grape growing was carried on about this time in Pennsylvania, Kentucky, Virginia, Maryland, Illinois, North and South Carolina, and a little later in New York and the District of Columbia.

The early efforts having resulted in comparative failure, through the attempt to propagate imported vines, earnest attention was turned to the improvement of the native varieties. When Major Adlum first brought the Catawba grape prominently to notice, in 1824, he sounded the tocsin of the native American wine industry.

The transactions of the "Cincinnati Horticultural Society" show that great interest was taken in viniculture even in the '30's, when annual wine exhibitions were held and premiums awarded, and so much was thought of the region as a wine growing section that the Ohio river was designated the "Rhine of America."

From the Fox, the Cape, the Catawba, Ives Seedling and Norton Seedling have sprung nearly all the eastern wine-bearing varieties, of which more than fifty are now in general use.

In the south, among many other varieties, the Scuppernong grape is largely cultivated, and a "mother vine" still exists which was planted on Roanoke island, North Carolina, in the days of Sir Walter Raleigh.

Around the Scuppernong vine is entwined a romance of early times in America, which has been immortalized by Sallie Southall Cotten in the "Legend of the White Doe," which purports to relate the fate of Virginia Dare, the first white child born of English parents on the soil of North America, whose disappearance, together with that of an entire party of colonists, is a mystery which history has not solved. The legend runs that this beautiful young girl was turned by Indian sorcery into a white doe, which, being shot by a silver arrow, returned to human form, and dying, her heart's blood fertilized a seedling

vine, the fruit from which yielded a deep red wine instead of the white juice usual to this grape.

"And the tiny shoot with leaflets, by the sunlight warmed to life,

Was the Vine of Civilization in the wilderness of strife."

The production of still wines of distinctive types has reached very considerable proportions in the eastern and southern states. A trade of many million gallons per annum has been created in wines, principally under individual labels, named after the grapes from which they are derived. Many of these wines are of excellent quality and have received substantial recognition at domestic and foreign expositions, including Paris, 1900.

Few realize the enormous growth of the American sparkling wine industry. Since Nicholas Longworth, in 1842, announced that he had "by chance" produced a wine naturally fermented in the bottle, the output has increased from year to year, but more rapidly in the last decade, until at the present day the consumption of wine made after the champagne process from native American grapes equals approximately one-half of the quantity imported from abroad; in other words, almost one-third of all the sparkling wine drunk in the United States to-day is produced from American grapes, and this ratio is constantly increasing. How much enterprise and energy, coupled with extensive advertising, have brought about this splendid result only those can tell who have fought the battle against the natural predilection in favor of imported champagnes.

The American product has a characteristic flavor extremely pleasant to those who are accustomed to drinking it. In point of sparkle, finish, bouquet and general excellence the native wine can to-day article, as an evidence of which may be cited that bear very favorable comparison with the imported American sparkling wines were awarded both gold and silver medals at the Paris Exposition of 1900.

In California the *Vitis Vinifera* immediately found congenial surroundings, and for the last fifty years viniculture has been a leading industry of the state. Numerous varieties of foreign grapes are cultivated. In one vineyard cuttings from the celebrated Lafite vineyard are growing, the grapes from which produce a very high-class wine. Wild grape vines are also found indigenous to the soil of California, and grow luxuriantly along the streams of almost every county, but so far native stocks have not been employed for wine grape culture.

Upward of two hundred and fifty thousand acres are devoted to grape culture in California, and the investment in grape growing and establishments for handling wine and raisins aggregates over eighty million dollars.

The vintage of 1902 yielded about forty-five million gallons of wine, and the average annual production is not far short of thirty-five million gallons, of which about two-thirds are dry white and red wines, and one-third sweet wines.

The climate of California permits of the production of wines, bearing a close resemblance to European types, which are largely consumed with ever increasing favor all over the United States, in Mexico, Central and South America, the Hawaiian Islands, China, Japan and other Oriental countries, as well as Great Britain and even on the continent of Europe.

California wines have taken gold medals at many international expositions, the most recent foreign recognition being that accorded in Paris in 1900, when four gold, nine silver, and nine bronze medals were awarded by the jury.

Grape culture is carried on to a greater or less extent in more than two-thirds of all the states and territories of the Union. Measures which tend to the uplifting of the wine industry should, therefore, in the interest of their constituents, be a subject for the solicitude of a great majority of the members of both houses of Congress.

It is in domestic consumption that an industry must find its great prosperity. France, typical as a wine producing country, despite her great home production, imports on the average almost four times as much wine as is exported.

Americans are not wine drinkers in the same sense as the French, the Italians and the Spanish, who consume annually almost fifty times as much wine per capita as the people of the United States. While it is gratifying to note that over ninety per cent of the wine consumed in the United States is domestically produced, the fact is rather discouraging that only about one-half gallon of wine per annum is drunk per capita as against one and one-half gallons of distilled liquors.

That the habitual drinking of pure wine, as practiced in European countries, is conducive to temperance, and not, therefore, to be classed with intoxicating liquors in general, is a generally acknowledged fact, which, in early days, was testified to by no less a personage than a president of the United States, the great Thomas Jefferson, who remarked:

"I rejoice, as a moralist, at a prospect of a reduction of the duties on wine by our National legislature. It is an error to view a tax on that liquor as merely a tax on the rich. It is prohibition of its use to the middling classes of our citizens, and a condemnation of them to the poisons of spirits, which is desolating their homes. *No nation is drunken where wine is cheap; and none sober where the dearthness of wine substitutes ardent spirits as its common beverage.*"

The evils following an unstinted and excessive use of coffee and tea are little realized, and if this

could be partly or largely replaced by a consumption of pure, light native wines it would redound to the benefit not only of the people at large in healthfulness, but to the increased profitable occupation of large acreage of land, and the establishment of happy and prosperous homes thereon; and also to the greater prosperity of transportation companies in freight on many carloads of wine, where they now carry only pounds of tea and coffee.

A dissertation on the native wine industry, detailing conditions of production in the various localities and the variety of wines in each district, would consume many hours. Realizing, therefore, that the time allowed to each speaker at this convention must necessarily be short in order to give opportunity for discussion of the many important topics before it, I will turn to subject matter which is perhaps of most interest to those here assembled.

Taken as a general proposition, the wines of native production offered to the consumer in the United States compare very favorably in purity with those of any country in the world, and the great percentage are absolutely pure.

Grapes in the wine producing sections can, as a rule, be grown in sufficient quantities and at a cost which offers little inducement for the use of adulterants to increase the volume. In fact, in the largest native wine producing center it is frequently a question of how profitably to distribute the generous yield of certain seasons. This, it is true, would be easily solved if laws could be passed limiting or prohibiting the marketing of wine until it has reached a certain period of maturity. It is the competition of immature wines of a succeeding generous crop that often destroys or injures the value of previous maturing vintages. Holders become nervous for their market, and a panicky feeling sometimes ensues, which impels them to attempt to force their product on the market at a greater rate than consumption will warrant.

The use of sugar to strengthen musts, which from climatic or weather conditions have not attained the necessary degree of sweetness to produce by fermentation an adequate alcoholic strength for the proper preservation of the wine, is practiced pretty generally all over the world. In some countries it is, under proper restrictions, permitted by legislative enactment. It would perhaps, therefore, be unjust for one section, blessed by nature with a benign climate which seldom fails to properly mature its crops, to endeavor to force upon another less favored section any unfair legislation; but great care must be exercised that privilege shall not degenerate into license, and while restrictive measures should not be carried to the extent of preventing the artificial strengthening of grapes which are too low in natural sweetness

to admit of their being made into wine, it is nevertheless not only necessary that the law should designate what kind of sugar shall be used, and to what extent, but that wines which are wholly or in part derived from glucose and contain antiseptics and artificial coloring should be plainly so designated upon the casks and bottles.

It is not claimed that glucose is unhealthful, for being a vegetable product, carefully extracted by the most modern and approved methods, it will probably bear favorable comparison with sugar produced from any other source; but if its use under the general designation of wine—of which the meaning, according to Webster, is

“The fermented juice of the grape,”

is to be permitted, the very fact that alcohol can be produced from the fermentation of glucose at probably one-fifth of its cost when produced by the fermentation of grapes, would soon render unprofitable the great vineyard investments of this country.

Let each stand on its own merits. Let grape wine be marked and sold as wine, and glucose be marked and sold as a corn product; or, if mixed, let this fact be plainly apparent to the consumer, and then if he prefers the corn or the mixed product to the pure wine the law will have done all that can reasonably be asked by the producer of grapes.

It is possible, as has been suggested by the eminent advocate of pure food legislation, who is now chief of the Bureau of Chemistry of the United States Department of Agriculture, that deficiencies in grape must in one section of the country might be supplemented by use of concentrated sugar produced from the grapes of a more favored section, so that the use of either cane or glucose sugars in pure wine in this country might be entirely dispensed with, and that pure wines so designated shall cover only the pure product of grapes, unadulterated by any foreign substance.

This would place our native wines on a high plane, and we could challenge comparison with all the world, for if wines contained no added substance, nothing but the naturally matured article could be marketed as pure; and immature, adulterated or sophisticated wines could no longer sail under false colors.

The greatest sufferer from spurious or adulterated wines must necessarily be the wine producing center the most remote from the great consuming markets, for freight on the wine and the extra cost of cooperage may almost equal the cost of growing the grapes. When stretching or adulteration is practiced near the centers of consumption such so-called wines can be, and often are, offered at prices which make it impossible for the distant grower to profitably compete.

The curse of the wine business to-day, in common perhaps with other industries, is the cry for

cheapness. The trade seldom asks, How good is your article, but how cheap is it? The cheapest wine cannot be really good, for the costs of properly maturing and handling are great and inexorable. Immature wines, and so-called wines which have only a sort of relationship to the grape product, make fierce competition for the honestly matured and wholesome article.

Handlers who wish nothing but the best—and to their credit be it said there are many such—get disheartened when they see their neighbors taking advantage of an indiscriminating and trusting public, and waxing rich selling wines at prices which spell penury for the more conscientious dealers.

The question which now confronts us, therefore, is, Shall quality prevail or shall cheapness rule? It is you, gentlemen of the National Association of State Dairy and Food Departments, who can influence the answer to this question.

Shall the enactment of such national legislation be encouraged, as will supplement the existing very generally excellent state laws, to enforce the labeling of an article, whether it be in barrels or in bottles, for what it actually is, and not for what the distributor chooses to say it is? Shall the public be entitled to truthful representation, or shall the edict of Barnum that "The public loves to be humbugged," be the watchword?

In this connection it is well to mention that in order that laws be respected the responsibility of analysts must be unquestioned. Instances have occurred where an absolutely pure article has been branded as impure and dealers put to humiliation and expense through the inexperience in the composition and analysis of wines on the part of chemists to whom samples have been submitted. Such occurrences tend to bring upon pure food laws opposition and antagonistic comment. No article should be publicly condemned without previous right of appeal to a disinterested tribunal, preferably the Bureau of Chemistry of the United States Department of Agriculture, which should be made the Supreme Court for pure food decisions.

It is frequent gatherings, such as this distinguished company here assembled, which are needed to arouse the public sentiment of customers to demand what they pay for, namely, *the best*, under labels guaranteeing purity and maturity. If the consumer really desires the cheapest, without regard to quality, the fact should stare him in the face daily in the label on his bottle, but the masquerading of immature or fake wines under the guise of a good, honest article should be stopped by the strong arm of law, judiciously and equitably executed.

When this is accomplished a discriminating taste will be rapidly awakened among consumers, which will increase ten-fold the present consumption of honest, pure, healthful wines.

The security of investments in vineyard prop-

erty will then be assured, and fluctuation in prices which now cloud the enterprise be avoided; and, relieved of the incubus of cheap goods masquerading under standard quality labels, the native wine industry will go forward by leaps and bounds.

The native wine industry will never attain its proper prominence until the public has the opportunity of judging the true merits of the best wines through selected vintage carefully matured and bottled at originating cellars, whether these be cellars of individual vintners or of large central handlers, like those of Bordeaux, having the opportunity of picking out suitable wines throughout a region for properly aging, and able, like the great French houses, to guarantee under standard labels the quality and maturity of the wine and to stand or fall by the public approbation or disapproval of any deviation from a given standard.

Such wines, of course, will have to command an adequate price to compensate for all the care and attention necessary, and will not, therefore, in any way come in competition with the cheaper wines.

I wish, in conclusion, to acknowledge the courtesy and kindness of Mr. Paul Garrett, of Norfolk, Virginia, in furnishing statistics and valuable old records for my use; and also of many other eastern wine makers who have courteously answered inquiries on matters relating to their districts; my thanks are also due to Mr. E. R. Emerson, who, sometime ago, kindly sent for my perusal his work, "The Story of the Vine," all of which have been of material assistance to me in preparing this paper.

CHAIRMAN BAILEY: We have time for one more paper before we finish this discussion, and we will now hear from Mr. Rossati, the representative of the Italian Government.

#### ADDRESS OF MR. ROSSATI.

Mr. Chairman and Gentlemen:

I have listened to the address of Mr. Morgan on California wines, and I desire to say that to almost all of the principles which he has discussed I subscribe entirely. I think that the suggestion he makes that grape must from one section of the country which fails to reach a certain amount of sugar be mixed with that from another part of the country which will supply the deficiency, is a very good suggestion and a very practical one and deserves to be encouraged and studied further, so that it may find its practical application. Along the same line, in Italy, we try to improve our northern wines by bringing wine from the south and merging them, but we found that the industry in years when there was a scarcity of grapes, could not succeed from a financial point of view because the price of grape juice became too high and because it then paid the man better to transform his grape juice into wine than into condensed grape juice. But I think the consummation of his suggestion is very desirable, and also I think it would

bring on a greater intimacy between the producers of the various states. The producer of the eastern states would establish more intimate relations with the producer of the western states, and out of this greater intimacy much good would no doubt result.

I think that the great question in regard to wine in this country is to encourage its consumption, from a hygienic standpoint, in substitution of standard drinks. The consumption of wine is essentially leading to temperance. The effects even of excess of wine are not so bad as the effects of excesses of standard drinks, and one great point is to be sure that the wine is pure, and I wish that the state laws should be sufficiently strict and rigorously enforced so as to prevent much of the adulteration that is practiced in certain of the large cities, chiefly the adulteration by dilution of the wine with fruit juices of an inferior quality, or with wines made from currants. There should be a greater control with reference to the use of these substances, and it seems to me that the boards of health of the large cities do not take sufficient interest in that subject. They take sufficient interest in the control of milk and water, but they do not take so much interest in the subject of wine, and I think there is a class of people of Latin origin who use habitually wine, such as the Italians and French, and they have a right to be protected against the work of certain people who labor in the dark. I believe also that the standards and methods of analysis should be very strict, not only as regards the exclusion of any foreign matter in wines, but also in regard to the ratios which must exist between the constituents of the wine, that the ratios must come up to the required standard, and when wine reaches the minimum only of those ratios it should be looked upon with suspicion and the investigation should be most thorough in such a case so as to insure that the wine is not adulterated.

I hope that we will arrive at the pure food law, and that, as a result of it, there will be an improvement in the enforcement of the control of wine as well, this being an important matter for the people who are accustomed to its use.

I wish to state in connection with this matter that it is a very satisfactory thing that there are practically no imported wines adulterated, at least from my country, Italy. We have in force there a very strict law against adulteration, based upon the principle of preventing the sale of anything that would be used in adulterating, and this includes all juices or liquids which could be used in adulterating wine. If they are found in the cellars of wine merchants, these juices or liquids are condemned to be destroyed.

With regard to punishments, these are very severe. They are proportional—that is, the fine is for the amount of adulterated wine that has been

condemned and is such as to amount to the value of the wine. In extreme cases of repeated offense the fine is increased to much larger proportions, and in cases of wine exported or intended to be exported to foreign countries, the penalty is applied to the fullest extent.

I also take occasion to state that I am, on the whole, very well satisfied with the instructions which have been issued by the chemist of the United States Department of Agriculture with regard to the standards required for imported wines. I entirely subscribe to those requirements and I think they will raise the standard for imported goods and also protect the consumers and growers, who will benefit by the reputation their goods have acquired in many cases through years of labor. I am very well satisfied with the discipline which has been introduced in these matters, which I think will lead to the common welfare, and everybody who is interested, both importers and producers of wine at home, will unquestionably derive great benefit therefrom.

I thank you very much.

A recess was then taken until 1:30 p. m. of the same day.

Friday, September 30th.

Congress met pursuant to adjournment, at 1:30 p. m.

CHAIRMAN BAILEY: We will now take up the subject of "Brewed Products." The first address will be by Dr. J. E. Siebel.

DR. SIEBEL: Mr. President, and Gentlemen of the Convention—I have the honor to address you on a subject which is somewhat lengthily stated in the program, "Science and Its Relation to Adulteration, Dilution, Substitution and Legal Enactments;" and I have shortened it a little to make it more commensurate with the size of the paper I have to present. I have given it the title, "Science and Pure Food Laws," and it runs as follows:

#### SCIENCE AND PURE FOOD LAWS.

##### ADDRESS OF DR. J. E. SIEBEL.

Director of the Zymotechnic Institute, Chicago, Ill.

Whenever the subjects of food adulteration and sophistication are touched upon, science notably chemistry is invoked, but its function in this respect is quite frequently misjudged.

Many people are of the opinion that the sophistication of articles of food is a fine art of modern coinage for the practices of which chemistry is chiefly responsible.

Others appear to believe that chemistry is able to detect the nature and extent of every sophistication or contamination beyond every doubt and controversy.

Again it is surmised that science can readily tell us, as to what is admissible and what is not in

this direction both from hygienic as well as from a commercial and economic standpoint.

Neither one of these views is correct: The desire to cheapen or to improve victuals or to protect them against deterioration and corresponding practices are probably as old as mankind, certainly much older than the science of chemistry.

Mineral substances of more or less harmful character were admixed to flour, lard was mixed to butter, blue vitriol with pickles, and wine was treated with sulphurous acid to insure its keeping hundreds of years ago, and the sterilization of victuals by heat was known to the Japanese thousands of years ago; many similar examples might be quoted to show that such practices are not the modern result of chemical science, but that on the contrary this science was first to expose and curb them.

But notwithstanding this there are or in the near future may be many practices in this direction, the performances of which chemistry may be unable to discover at least not with absolute certainty and sufficient quantitative correctness as to place their existence beyond what is legally termed a reasonable doubt. The exact quantitative separation of mixtures of fat, say of cotton seed oil and olive oil or of butter with oleomargarine are still a desideratum, only approximations can be made.

To determine if wine has been slightly sulphured may become impossible after a certain time, the questionable substance having meanwhile entered combinations which are naturally present in every wine.

The necessary use of other cereals in connection with many kinds of barley in the manufacture of beer (which several years ago was foolishly attempted to be made the subject of legislation by some misguided or interested persons) can not be discovered by chemical analysis, and there are a great many other questions connected with the food and drink controversy, which science might be expected to decide but is not able to do at present.

Notably prominent among those questions are those relating to the wholesomeness of substances and practices and to the admissibility of the latter in a commercial and legal sense. The controversy between scientist in regard to the hygienic qualities of boracic acid, salicylic acid, sulphites and other antiseptics is by no means settled and there are equally great doubts as to whether coloring is less noxious in natural butter than in oleomargarine and as to whether the latter is equally or more wholesome than the former.

I do not mention these facts to belittle or disparage science but to show in which way it may further exert itself in this behalf and to demonstrate that a limit must be drawn within which lawmakers may safely rely upon chemists, to

make their measures practically applicable for without this essential requisite their laws are worse than none.

Of course by this caution I do not desire to admit that all laws which may be enacted under the head of pure food laws, which can be enforced with or without expert scientific assistance analysis, etc., are good and wise measures.

On the contrary, I am free to say that all laws enacted under the guise of sanitary measures are bad and reprehensible when they partake of a sumptuary character or are calculated to protect one industry at the expense of another and science should not permit itself to become a tool of parties who are interested in lawmaking of this kind simply to increase the usefulness of some of its votaries or to appease the clamors of some well-meaning but narrow-minded people.

All laws on practices of adulteration and sophistication which can not be enforced for want of sufficiently convincing expert evidence are likewise reprehensible.

To understand the scope of this assertion more clearly we may remember that articles of food and drink are adulterated, diluted, drugged, admixed or otherwise treated chiefly for the following purposes:

To improve the taste, appearance, etc., of an article.

To cheapen an article.

To change the strength of an article.

To cheapen and improve an article at the same time.

To increase the keeping qualities of an article, etc.

It goes without saying that all practices which are followed to cheapen or improve the taste and appearance of an article and which involve even the slightest danger to human health, should be abolished and inasmuch as a rule science is readily able to detect such practices from their very nature, and as laws are nearly everywhere to cover such practices, there is no difficulty in prosecuting them successfully and no excuse for the respective officials who neglect to do so. The coloring of pickles by salts of copper, adulteration of vinegar by mineral acids, of sugar or flour by mineral matter, etc., may be quoted as examples of such practices.

Another class of practices which must be reached by the law are those which, while they are not objectionable from a sanitary point, lessen the economical and commercial value of articles in a deceitful manner. Such adulterations are also generally readily discoverable by chemical analysis, and therefore there is no difficulty to make them also answerable to the law. Cases in point are the dilution of milk with water, adulteration of cream of tartar by gypsum, etc. Adulterations of this class which are clearly made for the sole

purpose of deceiving the public should be prohibited.

There is a class of adulteration a little different from the foregoing for which the adulteration of ground pepper by ground stale bread may stand as a representative.

Here we have the same tendency to deceive and the same deterioration of economic value but as diluted pepper appears to be found preferable to the genuine strong article by many, because it prevents an overdose for a weak stomach and as such a dilution cannot well be made by the housewife, it may be sufficient in such cases to oblige the spice mongers to state the extent of dilution on each package, a measure which could also be readily enforced, as it can be readily checked by chemical and microscopical analysis. A similar measure would also seem to be proper in cases of food adulteration of the class, of which the mixing of olive oil with cottonseed oil is an example, as this also is calculated to deceive, but does not deteriorate the economic value to any perceptible extent.

In conformity with the latter peculiarity, the extent of an adulteration of this kind is more difficultly determined by analysis.

In view of these facts it may be a question whether it is better to leave such cases to themselves and to their partial correction by the unwritten but inevitable laws of commerce or to attempt their prosecution, which in the absence of rigid chemical proof is quite liable to turn into a farce very much to the discredit of science and justice alike, as has been demonstrated in many cases.

While it may seem to be susceptible of argument as to what should be done in cases like the foregoing, it appears to be plain that practices of economically necessary substitutions, etc., which are calculated to improve articles of food and drink not only apparently but actually so, even though there may be a real or apparent incidental cheapening, should not be made the subject of judicial interference, especially not when they are of such a nature as to be practically beyond the reach of scientific determination.

I refer here to such practices as the sugaring of wine, which becomes necessary in unfavorable seasons to make the product of the vine a healthy and palatable beverage instead of leaving it a sour and undrinkable liquid.

Owing to the almost absolute chemical identity of "pure" artificial grape sugar and the natural sugar of the grape which identity is totally absolute after fermentation, this adulterant or auxiliary more properly speaking cannot be discovered in the wine by scientific test.

It seems to be plain that the majority of attempts to make such cases amenable to the law would prove futile and if anything hit the honest man stronger than the rascal, besides giving per-

haps a great stimulus for the development of spies and blackmailers.

With even more justice and expediency a similar exceptional position must be allowed to beer for the production of which other cereals besides malted barley are used. Not only that these malt auxiliaries have been used for many centuries past, and that owing to the absolute identity of their derivatives in beer their origin is beyond scientific discovery, but as a matter of fact the beer made with such auxiliaries possesses desirable qualities which can not be readily imparted to an exclusively malt beer; certainly not with a great many kinds of malt, which imperatively require other cereal auxiliaries to produce a first-class beer, as has been shown by me many years ago.

Hence any attempt to interfere with the free use of cereals for brewing would not only be equally unjust to brewers and consumers, but would also be a grave historical error for every one of the ordinary cereals has been used for brewing at one time or another. Hence no definition for beer would be perfect which did not provide for this circumstance and any legal enactment to the contrary would be simply absurd. Indeed I would not have mentioned this matter here had it not been to show the diversity of cases which present themselves in the food and drink controversy.

The practices followed to insure or increase the keeping qualities of articles of food and drink by artificial preservation might be treated in a similar manner from a legal standpoint, that is those which involve or are suspected to involve dangers to human health should be absolutely prohibited and treated as a criminal offense and such as are known not to involve such a danger should be tolerated in the same manner and under the same restriction as the substitution of absolutely harmless and economically equally applicable substances.

The reason why this sweeping but simple policy can not be followed in the case of preserving victuals is to be sought in the fact that there are hardly any means for the preservation of articles of food which are considered harmless beyond any controversy. On the other hand it must be borne in mind that the exigencies of trade and commerce as well as those of common life absolutely demand that most perishable goods are preserved for a longer or shorter period.

These rather conflicting conditions have to be harmonized in the most judicious manner and to do this the chemist and sanitarian must join hands to a combined effort to devise such methods which will insure a sufficient preservation with the least possible harm to health, for it can hardly be expected that any universally employable method can be found, to which some objection would not be raised by somebody.

Among the means used for preserving victuals

the addition of chemicals appears to be most obnoxious to the greater number of people, and chloride of sodium appears to be about the only one against which no objection is raised in this respect, and in view of this fact some people insist that only the preservation obtainable by cold storage drying and freezing and by sterilization by means of heat should be deemed admissible.

Notwithstanding that these latter methods of preservation cannot be employed in all cases there are objections even raised to them in many cases where they seem to be eminently in place.

It is claimed, for instance, that cold and freezing deteriorates fowl, that it reduces the acid in lemons, etc., and it is claimed that during sterilizing by heat many articles, notably milk, lose some of their digestible properties, especially in the case of feeding infants and it has even been suggested that preservation by a modicum of boracic acid would be less harmful.

Questions of this kind can probably only be definitely settled by elaborate feeding experiments, but in the meantime some modes of preserving should be made accessible, for whatever objections there are and may be made against sterilization of boracic acid, sulphites and salicylates which by many authorities are considered comparatively harmless, they are probably less dangerous than spoiled articles or milk and meat in the state of initial decomposition.

Of course it would be convenient if all these questions could be disposed of by summary sweeping and heroic legislative measures. However, this is hardly desirable and practicable for many domestic articles, but I see no reason why such measures should not be rigidly applied to such imported articles of food and drink which are unduly sophisticated with antiseptics, when the same goods in equal or better quality can be obtained in the domestic market in a comparatively pure condition.

Since to-day the work of this convention appears to be chiefly devoted to beer, I cannot fitly close these necessarily somewhat aphoristic remarks, without emphasizing the fact that beer is fortunately exempted from the troubled questions relating to the keeping of victuals in general.

This probably accounts for the great popularity which this beverage has so universally enjoyed for ages, it having when properly brewed and treated among its many naturally inherent virtues, the one to keep the others intact from degeneration.

Moreover the arguments made against sterilization by heat quoted in the case of milk, etc., cannot be made in the case of beer, for as an article which is made by mashing and boiling the higher temperature can not change its nature, except as to taste. The change, however, brought about in

this respect is relished by most people and objected to by only a few.

The brewers therefore are not in need of any special legislative toleration in regard to the use of any antiseptics to which the least objection may be raised and therefore it may be asked, Why are they represented in this convention?

Doubtless the chief reason is to assert by their presence, that they, as the producers of the chief beverage of the land, are in harmony with the exertions of the congress and also to see that if the almost impossible "definition in a few words" of an article of so comprehensive and manifold a meaning as beer must be attempted, it is not done without giving those expert in the brewers' art a hearing.

MR. EMERY: I would like to ask the gentleman to what laws he refers as approving antiseptics in milk?

DR. SIEBEL: I don't think I stated anything like that. I said, "Moreover, if concessions are made to milk dealers."

MR. EMERY: Have you said anywhere that any such concessions are made?

DR. SIEBEL: It does not seem that I have said they have been made in this article.

MR. EMERY: I think it is assumed there.

DR. SIEBEL: No, I say if concessions are made. All this work is inceptive, more or less. It does not refer to work which has been done, but work which is intended to be done.

CHAIRMAN BAILEY: The next is an address by Mr. Julius Liebman, of the Liebman Brewing Company, Brooklyn, New York, and I will now call upon him.

#### ADDRESS OF MR. JULIUS LIEBMANN.

I shall not devote much time to the subject with which my name is connected on the program. When I first saw the proof sheet which was sent me for correction, I requested the secretary to strike out the subject assigned to me, but now that it is still on the program, I will briefly state at the outset that in the absence of a recognized national standard of purity it would be venturesome and withal a useless proceeding to discuss the question of adulterations. So far as beer is concerned, no such standard has as yet been established in our country.

The statutes of a few states concerning materials which may not be used in brewing refer in most instances to substances which no brewer has ever used, nor ever thought of using, and which to nearly all brewers are even unknown by name or sight. Official analyses instituted at various times by different authorities appear to warrant the assertion that adulteration in the commonly accepted sense of the term is not practiced by the American brewer to any appreciable extent.

Like the English, French, Belgian, Dutch and other brewers, the American brewers all use near-

ly the same materials and it is with regard to these materials that national standards should be established, for when the term adulteration is applied to beer by persons otherwise unbiased, it invariably means the use of materials other than barley malt.

In Bavaria, Wurtemberg<sup>o</sup> and Baden the use of any materials other than barley malt, hops, yeast and water is deemed adulteration. The brewers of the other German states considering themselves at a disadvantage on account of the quasi government certificate of good character given to the beers of these South German states have in vain petitioned the Reichstag year after year to adopt laws similar to the Bavarian. Switzerland, the country whose boundaries adjoin Baden, Bavaria and Wurtemberg in all of which the brewing materials are restricted has likewise refused to enact so-called Bavarian law at the urgent request of the Swiss Brewer's Association.

The members of the Swiss Brewers' Association after the refusal of the Federal Council, passed a resolution that they would voluntarily live up to the Bavarian law, but that is in the public mind far less than the government guarantee.

The brewers of this country represented in the United States Brewers' Association, would gladly adopt the course either of North German or the Swiss Brewers, and the English, French, Belgian, Dutch and other brewers of the world would doubtless do likewise if they could be assured that prime brewing barley such as will produce a wholesome and palatable beer without the admixture of other cereals in an unmalted state could be obtained in sufficient quantities to supply the demand. Our advisory committee in their last annual report, assuming for the sake of argument that a law prescribing an all malt standard had passed, states the following as to the result of such a measure, viz.: The discrimination in favor of a barley-malt would have created a condition of things which the American brewer could not have lived up to, if he desired his product to be classed as standard, save by lowering very considerably the present quality standard of American beers. Unable to procure prime barley-malt he would have been compelled to use inferior material at his disposal without the corrective adjunct of raw cereals, and the result would necessarily and inevitably have been an article as inferior in quality to the present average American malt liquors as the average Bavarian beers are inferior to Munich beers. The difference in quality between the average Bavarian beers and the beers produced in Munich and a few other Bavarian cities, all brewed under the same law as to exclusive use of barley-malt is without doubt the best argument against such an arbitrary standard. The Munich beers are quite as much in demand throughout Bavaria as in the rest of Germany where they command a very much higher price than paid for the local Bavarian beers,

brewed under the same restrictions that apply to the Munich brewer. The result is that the Munich brewer, having a large and constantly extending market for his product for which he is paid considerably more than the prevailing price of beer, can afford, and in order to sustain the reputation of his product is compelled to select the very choicest hops and the finest quality of barley and to pay correspondingly high prices for these materials, just as the few firms of international reputation in other countries have to do. Now, no man of any knowledge upon this subject need be told that the quantity of materials of such superior quality of such excellence as these establishments require, is exceedingly small even in the most favored districts of Europe; and no matter what sacrifices the American brewers as a body might be willing to make in order to obtain such materials, they could not get them, simply because they are not produced in sufficient quantities. This view of the matter is the basis of the report of the British Parliamentary Commission on Beer Materials from which I desire to quote you the following, viz: "The question as to the relative merits of different brewing materials cannot be unconditionally settled with the data at present available; but the balance of experience and authority inclines to the view that while an all malt brewing from a blend of malt made from the best English and foreign barley, is still the best for some descriptions of beer (pale bitter ale for example), yet, for other descriptions, which constitute by far the larger portion of the beer consumed, the medium or lower qualities of British barley malt are improved as brewing materials by addition of a moderate proportion of good brewing sugar; and this is especially the case when the barley from which the malt is made has been imperfectly ripened, or harvested under unfavorable conditions."

The American brewers, as represented by the United States Brewers' Association, have vigorously supported the pure food movement from the very beginning; they desire pure food legislation designed to prevent any kind of adulteration that is injurious either to the health or to the purse of the consumer; any adulteration that amounts to deception or fraud upon the purchaser. But they are not satisfied with preventative measures only; they desire and strongly urge that punitive measures be applied in any case belonging to this category of adulterations. On the other hand they wish it to be understood the practice (which prevails throughout the country) of correcting the defects of imperfect barley-malt by the admixture of other cereals as wholesome and pure and nutritious as barley should not, and in reason cannot, be regarded as an adulteration.

MR. LIEBMAN: Mr. Chairman, I would like to take advantage of this opportunity to correct

a statement that was made by the representative of the candy manufacturers this morning, when he stated that so far as his knowledge went, his was the only association which subjected its members to a chemical control of their industry. I wish to state that the brewers go even much further than that. They have many stations in the United States devoted exclusively to the examination and the control of the products that go into the brewery, and they voluntarily subject themselves to this control by these stations, even where they have laboratories of their own, which is the case in all except a few instances, and so far as beer is concerned, the brewers try in every possible manner to produce an article which is both wholesome and pure.

CHAIRMAN BAILEY: We will now listen to an address by Dr. Wahl, of Chicago, entitled "Does the Feeding of Brewers' Grains Influence the Quality of Dairy Products?" As Dr. Wahl is not here, the paper will be read by Mr. Wilson.

#### ADDRESS OF DR. R. WAHL.

Does the feeding of "Brewers' Grains" influence the quality of the dairy products?

The enormous quantity of brewers' grains, over half a million tons yearly, calculated as ordinary dry grains, makes the question of the value of this product as a feed for the milch cow a highly important one.

That it is a most nutritious material is undeniable. Numerous analyses have shown that in the ordinary state of dryness they contain—

Of albuminoids over 20 per cent.

Of fat over 6 per cent.

And of carbohydrates (starch, sugar, etc.), 40 to 50 per cent.

Had the brewers' grains been used exclusively in the dry state, there would probably never have been any objections raised against them as a feed for milch cows. The wet grains, however, containing as they do when they leave the mash tub, about 75 per cent of water are liable to undergo changes, especially in warm weather, changes produced by fermentation and putrefaction.

During the mashing of the malt the greater part of the starch is changed into soluble substances, sugar and gumlike substances comprised under the name of dextrins. The albuminoids of the malt are only partly extracted, usually about 40 to 45 per cent of the total albuminoids are brought into solution and enter the wort. The other 55 to 60 per cent remain in the grains in very much the same state as they existed in the barley previous to the malting. Besides these insoluble albuminoids a small percentage of the soluble albuminoids which enter into solution in the wort at lower temperatures in the beginning of the mashing operation are thrown down again by the higher

temperature at which the mashing is finished. These coagulated albuminoids may properly be compared to the hard-boiled white of an egg, and add considerably to the richness of the grains.

By the removal of the wort and the consequent washing of the grains with hot water the soluble carbohydrates, sugar and dextrin, as well as the soluble albuminoids are eliminated from the grains as completely as is practicable. There remains, nevertheless, a certain small percentage of these substances dissolved in the water contained in the wet grains.

It is due to these soluble substances, especially the sugar and the soluble albuminoids, that the wet grains easily enter into fermentation and putrefaction, most readily when exposed to the air at a high summer temperature.

The malt contains various species of bacteria which at a favorable temperature and with a proper amount of moisture, rapidly increase. Most important of these micro-organisms are the lactic acid bacteria. As their name indicates they produce the organic acid found in sour milk, the lactic acid.

In the presence of albuminoids the sugar contained in the wet grains is split by these bacteria into lactic acid. This formation of acid causes the souring of the grains. The expression souring is here used solely to indicate the acquisition of a sour or acid taste.

If the fermentation is arrested at this stage no bad odor is produced, since the lactic acid is a non-volatile and, consequently, odorless liquid.

It is a well known fact that the lactic acid has a very beneficial action upon the digestion. Beer as well as buttermilk (sour milk) have earned their popularity as healthy and refreshing drinks to a great extent from the lactic acid contained in them. Both have from time immemorial been the favorite drinks of the Teutonic races.

That the lactic acid of the wet grains has an equally beneficial influence upon the digestive functions of the cow can be taken for granted. That the flow of milk is improved by this acid is a belief held by many.

The acid fermentation if allowed to go on will not, however, stop at the lactic stage. When the amount of this acid has reached a certain percentage it acts as a check on the further activity of the lactic acid bacteria. Then another species, the butyric acid bacteria succeeds the lactic acid bacteria, especially at a high temperature.

The butyric acid bacteria are capable of turning not only the sugar but also the lactic acid into butyric acid, the acid of rancid butter. This acid is a volatile liquid of a disagreeable sour odor, and its formation gives to the wet grains their characteristic odor resembling that of sauerkraut.

When we consider that this acid, the butyric acid, is a component part of butter, in which it is found as a glycerine ester, it would be unreason-

able to suppose that this acid could be injurious to the cow, at least in such quantities as are found in the grains. On the contrary it might well be held that such a substance would act beneficially upon the production of milk and butter.

It is, therefore, not surprising that the practical tests bear out such an opinion. In the report of the New York Agricultural Experiment Station about "Brewers' Grains as Food for Milch Cows" (1884) is found this statement: "We have thus our answer very plainly outlined; the feeding of the brewers' grains was conducive to the flow of milk."

And the official report from Germany testifies to the fact that brewers' grains have a most favorable effect on the secretion of milk; giving a milk of highest quality and that the butter from such milk possessed excellent flavor and keeping qualities.

Both of these fermentations by the lactic and butyric bacteria increase the acidity of the wet grains, they are acid fermentations. The action of both these bacteria are checked by the very acid they produce. And thus it happens that after a certain time a new and different fermentation sets in.

This last fermentation is the result of the activity of the putrefaction bacteria or termobacteria and this change is the cause of the rotting of the grains. What particularly distinguishes this decomposition from the two previously mentioned is the production of ammonia, which gradually neutralizes the acids formed during the two earlier stages so that the reaction turns alkaline. The color of the grain is darkened and at the same time the odor becomes more offensive. This change commences on the surface and gradually proceeds downward. It does not take place if the air is excluded, and can therefore easily be prevented. If wet grains are stored in an air-tight box, and a sprinkling of salt added on top of every layer of grain 10 to 12 inches thick, the grains will keep in good condition over summer.

But even if the grains become slightly putrid they do not seem to be more injurious to the cow than ripe cheese is to the human stomach.

In the experiment of the New York Agricultural Experiment Station quoted above grains were fed that had become very rotten, black and maggoty, but no trace of deterioration could be found in the milk as to taste, flavor and keeping quality as a consequence of such feed.

There is, of course, no necessity of allowing the wet grains to become rotten. Even if the grains in such state are not injurious to the cattle, their food value is lessened. The putrefaction bacteria reduce the carbohydrates and albuminoids partly into carbondioxide and ammonia and thus destroy them.

If the wet grains are dried without delay, they contain very little lactic acid. The question may

therefore be raised whether the drying process lessens the value of the grains. A comparative test of the feeding value of moist and dried grains was carried out at the New Jersey Agricultural Experiment Station and published in their fifth annual report. It was found that a change from dried grains to moist was followed by an increase from 21.4 pounds per cow to 22.5 pounds daily. The conclusion is, therefore, that the digestibility of the food is slightly diminished by the drying process.

The advantage of the dried grains is that they will keep for any length of time without becoming deteriorated. One pound of dried grain contains as much food as three or four pounds of wet, according to the amount of moisture in the wet grains.

A steeping of half an hour in hot water or five to six hours in cold water restores the dried grain to the same conditions as when fresh from the breweries.

Taken all in all it can be said both from a theoretical and practical standpoint that brewers' grains are equal to, if not superior to any other feed in milk producing properties, that they are wholesome and nutritious, and at the same time the cheapest food.

CHAIRMAN BAILEY: This I believe includes the program down to what we know as "Pure Food Afternoon." This afternoon is to be taken up by addresses by the various food commissioners, and after a year's hard work and study and experience we may expect to get a great deal of useful knowledge from them. The first one on the program is our old standby Mr. Noble, of Connecticut.

#### ADDRESS OF HON. J. B. NOBLE.

#### NATIONAL ASSOCIATION OF STATE DAIRY AND FOOD DEPARTMENTS. ITS ORGANIZATION AND PURPOSE.

It is true that from small beginnings great corporations have grown, and we also see some organizations somewhat limited in importance at their conception, which have grown in strength and power until they are commanding the attention and thought of the United States and of the world. It has been known for several years that many kinds of food in common use upon our tables were being adulterated with articles which would cheapen them in value, and that ingredients were being used to make them appear much better than they really were, which were decidedly injurious to health.

A few years ago when it was realized in some of the great dairy states that large quantities of oleomargarine were being manufactured and sold for butter. It was decided that some action should be taken to protect consumers as well as producers

against having a cheap fraudulent article put upon the market in place of genuine butter.

Laws were enacted in several states to guard against this fraud, Connecticut being one of the first to place an imitation butter law upon her statute books. Other laws in the interest of pure food and the protection of the public against fraudulent food products were enacted by many states as the attention of the people was aroused to see the necessity of it.

The different states of course passed their own laws independently of each other and in some cases the laws were quite different upon many material points.

That better and more efficient work can be accomplished all along the line by some concerted action of the different commissioners was early seen. Following out this thought and with the earnest desire that it might obtain Hon. Joseph E. Blackburn and Hon. Elliot O. Grosvenor, the efficient and determined dairy and food commissioners, respectively, of Ohio and Michigan, met in Toledo, Ohio, in the early part of May, 1897, to discuss plans and make arrangements for the organization of a national association to be composed of the workers in the field of food adulterations in the different states.

After considerable correspondence a meeting of the dairy and food commissioners was called to meet in the Turkish room of the Cadillac Hotel, Detroit, Michigan, August 25, 1897, for the purpose of organizing a National Association of State Dairy and Food Departments. Hon. Joseph E. Blackburn was elected chairman and Hon. Elliot O. Grosvenor, secretary. The following committee was appointed on credentials: Lawrence of Minnesota, Wells of Pennsylvania, and Noble of Connecticut. This committee reported the commissioners from ten different states and their assistants who were present to make up the roll.

The following by-laws and constitution were adopted. These are recorded in the report of the first meeting and also in the report of the meeting held in Portland, Oregon. It was decided that the name of this association should be the National Association of State Dairy and Food Departments and the objects of the association as set forth in the by-laws was and is to promote and foster such legislation as will tend to protect public health and prevent deception in the manufacture, sale, and use of dairy food and other products intended for consumption.

To promote uniformity in legislation and rulings relative to dairy and food products.

To enhance the efficiency of dairy and food laws by developing an acquaintance tending to harmonize the interests represented by those charged with the enforcement of such state laws.

Hon. Joseph E. Blackburn of Ohio was elected president of the association and Hon. Elliot O. Grosvenor of Michigan was chosen permanent sec-

retary, and thus this National Association of ours sprang into active life.

The association met in Harrisburg, Pa., with an enlarged membership; in Chicago in 1899, in Milwaukee, Wis., in November, 1900, in Buffalo, N. Y., in 1901, in Portland, Ore., 1902, and in St. Paul, Minn., 1903.

Recognizing the great good that can be accomplished by such an organization as ours we have been welcomed by the governors of the different states and the mayors of the several cities where we have held our meetings.

Great interest has always been manifested and earnest efforts have been put forth each year to make the meetings of the association a success.

Hon. J. E. Blackburn and Elliott O. Grosvenor held their offices respectively of president and secretary for two years, accomplishing good results by their earnest and united work and leading the association on to stronger efforts to make the success of the association and of the various departments of which it was composed a power for good.

In 1899 Hon. A. H. Jones of the great state of Illinois received his dairy and food commission. He at once became an active and influential member of the association. At the meeting in Milwaukee he was elected president and by his zeal and energy has been a great power in the organization. At the meeting in Portland Hon. J. H. Bailey of Oregon was elected president and the Hon. R. M. Allen of Kentucky, secretary.

Under the administration of these strong and energetic men we have met here at this time the association made a very happy selection when they elected Mr. Allen secretary. He has been untiring in his efforts to make each annual meeting more effective and far reaching in its results than any of the previous ones.

It has been largely through his efforts that this international pure food congress was organized and a meeting brought about at this time. By the election of the Hon. J. B. Bailey as president it united the east and the west for more efficient work in the cause in which we are engaged.

We meet here this week a body of men engaged in one of the most important works that ever occupied the attention of any class of people.

This association stands for honesty and purity in the manufacture and sale of food products, and its great purpose has been and is to-day to secure unity of action, earnestness of effort in the administration of pure food laws of our country.

Organized only a few years ago with a small membership from a few states we now see on its roll members from thirty-five states all interested in the same grand work.

This association stands for uniform action all along the line of its membership for uniform rulings in regard to coloring matter antiseptics, or preservatives of any kind, and especially in regard

to labeling. The different commissioners in the different states have many of them made different rulings upon these important points in the carrying out successfully of the objects of our pure food laws. This creates friction and prevents the most effective work. This association desires to prevent all this so that we may all work together in the common cause.

But above all, this association stands for a national pure food law. We want this to strengthen and support our state laws. We want to protect those manufacturers who are putting only pure goods on the market against those who are manufacturing cheap adulterated articles and shipping to another state and many times using in the manufacture of these food products articles which are injurious to health.

We want to protect and uphold the honesty and integrity of the United States itself against those who manufacture and export to other countries food products below standard and that may be a menace to public health and safety.

From time to time in the past few years there have been pure food bills introduced into Congress. Some of them have passed one house but finally failed to become a law. The securing of a national pure food law is right along the line of work and the purpose of the association and while we may not be able to secure the passage of just such a law as each individual would desire it would seem best that we should unite on some one bill and make a strong and earnest effort to secure its passage.

Another purpose of this association is to fix food standards. There have been addresses and discussions on this point we believe at every meeting of the association.

An important step was taken when a committee was appointed to act with the committee appointed by the agricultural chemists of the country upon this vital question and good progress has been made.

Thus, my friends, in brief we have presented to you the conception and purposes of this organization and we congratulate you upon the strong and healthy growth you have made. Remembering the great purpose for which we were organized efforts have always been put forth to obtain thereto.

While the old proverb may be true, "That as a man thinketh so he is," we know that as a person eateth so is his health, disposition and pocket affected, whether it be in the large quantities of whole milk used especially by infants and children or the millions of pounds of meat put out by the great western houses, the large amount of canned vegetables and other edibles sold from the canneries from all over the country or in the baking powders, spices, salad oils, or other food products in common use.

As we meet here in this great assembly representing not only nearly all of our own states but

many other nations we can rejoice that the work of the association is arousing greater interest and growing in importance each year of its existence.

A little incident came up in connection with my own department just before I came here. I received a letter from a man in the adjoining city of Hartford asking me if he could manufacture ice cream out of skimmed milk and some other things which he did not care to tell, and I wrote him that there was no standard in the state or in the nation as regards ice cream, or any legal definition in regard to it, but that there was a legal definition for cream and that ice cream was supposed to be frozen cream; but we all know that there is a great deal of ice cream on the market which never saw any cream. This gentleman came to see me a few days after that and I told him that in the near future some definite action would be taken by the state or by a national food law which would cover all kinds of ice cream and my suggestion to him was that he had better not lay out too large an amount of money in the manufacture of skimmed milk ice cream unless he expected to sell it for what it was; that it was clearly a deception of the people and was unfair to those people who were using pure milk and cream and selling a genuine article of ice cream. In the east there is a great deal of ice cream sold made out of skimmed milk. There is a man in New York who is making machines for the production of steriline. This steriline has all the appearance of skimmed milk, and it is claimed that there is nothing in that but pure skimmed milk. He used about 50 per cent of that and 50 per cent of pure milk.

CHAIRMAN BAILEY: What Mr. Noble says about the ice cream is absolutely true. I believe no state in the Union has adopted a standard for ice cream, but there will certainly be an effort made in one state this coming winter to have such a statute passed, for I shall certainly take it up in Oregon and work to that end.

Mr. Critchfield was obliged to go home, I understand, and he designated Mr. A. H. Woodward to take his place, and we will now hear from him.

MR. WOODWARD: I am very sorry to say that matters in Mr. Critchfield's family compelled him to leave last evening. I know he would have responded to this discussion on the enforcement of law, so far as Pennsylvania is concerned, with a great deal more force and clearness and with a great deal more satisfaction to the association than I could do. I happen to be a special attorney for the Pure Food Department in Pennsylvania and have had some considerable experience with the enforcement of the law in that state, and there have been some things that have been so patent, lying right upon the face of matters in reference to the enforcement of the law that they have been

necessarily brought to my attention, and it is concerning them that I intend to speak to the association very largely.

ADDRESS OF MR. A. H. WOODWARD.

The first essential in the enforcement of pure food laws is to have good laws. By that I mean, laws whose fairness will commend themselves to the deliberate judgment of the people of the state and that will be backed by sufficient public sentiment to secure their enforcement at the hands of a jury. The crying need of the hour is uniformity of legislation on the part of the several states, supplemented by an adequate national law in control of interstate commerce in adulterated foods. Until that system is adopted, the manufacturers of food products will have a right to complain because certainly the variations of label required by different state laws and other special provisions peculiar to particular states must be to the manufacturer of a widely distributed food product a source of continual vexation. The Pennsylvania laws are not the best in the world and by no means the worst. The entire body of laws exhibits a lack of system and frequently there are troublesome questions which arise by reason of apparent and sometimes real interference of one law with another. We have separate statutes on oleomargarine, lard, vinegar, milk, alcoholic drinks and various other foods besides a drug act and an act relating to foods for animals. The enforcement of these laws is imposed upon different officials and boards. The agricultural department is required to enforce most of them, but the drug act is enforced by the state pharmaceutical board. In some cases, the local health boards of the cities, by special enactment are charged with the enforcement of the laws relating to milk. The principal act of assembly controlling adulterated foods was passed in the year 1895. It is based to some extent upon the Massachusetts statute and that statute is to some extent based upon the English law. The act of 1895 defines in the first place what shall constitute food and by the term food as used in that act is meant all articles of food or drink used by man whether simple, mixed or compound. It also defines what shall be deemed adulteration and contains seven clauses defining different ways in which the product may be adulterated. The portion of the act which covers the subject of preservatives is the seventh clause of the third section, by which it is declared that a food shall be deemed adulterated when it contains any substance or article which is poisonous or injurious to health. This imposes upon the commonwealth in any case where she seeks conviction for the use of a preservative, the burden of proving that the preservative used is poisonous or injurious to health. The Supreme Court of the state in the case of Commonwealth vs. Kevin has decided that under that clause of the law in order to sustain

a conviction it is only necessary for the commonwealth to prove that the substance used is in its nature poisonous or injurious to health and that if that is the character of the preservative used, it is immaterial as to whether the quantity used would be sufficient to produce injurious results in any given case. The fact that the burden spoken of is placed upon the commonwealth has led to very many interesting and instructive controversies concerning the various preservatives in which there have been some very pronounced conflicts of opinion on the part of various experts. The department in Pennsylvania has at great expense brought to the trial of these cases leading experts on food preservatives from all over the United States and has in almost every case succeeded in placing under the ban formaldehyde, salicylic acid and its derivatives, boric acid and its derivatives, sulphites and in some cases benzoic acids and its derivatives. The department of agriculture will probably recommend to the legislature an act of assembly prohibiting in express terms those preservatives as well as the use of saccharine.

Our present law in reference to coloring matter is contained in the sixth clause of the third section of the act of 1895, by which it is enacted that a food shall be deemed adulterated whenever it is coated, colored, polished, or powdered, whereby damage or inferiority is concealed. This necessarily imposes the burden upon the commonwealth to prove that the coloring matter used does in fact conceal damage or inferiority. It will be obvious to the most casual observer that this is an extremely difficult proposition for proof in many cases. It is proposed at the coming session of the legislature to obviate this difficulty by entirely forbidding the use of foreign coloring matter in food products. The difficulty of telling when a harmless coloring matter is used simply to improve the appearance of a food product and when it is used to conceal and cover up damage or inferiority will probably lead to placing the ban upon all coloring.

Our prosecutions in Pennsylvania are mostly prosecutions in the Quarter Sessions Court before a jury upon indictment of defendant for a misdemeanor. The multiplicity of suits consequent upon a vigorous enforcement of the law has led to some extent to the burdening of the criminal calendar of our large cities and the consequent delay in the execution of the laws. This has recently to some extent been corrected by the distinguished district attorney of Philadelphia adopting a rule to give to the pure food cases the preference in trial, but it is thought that a process of summary conviction before a magistrate with the right of appeal on the part of the defendant if convicted, will aid very largely in the execution of the law.

In reference to our oleomargarine law, we have recently encountered difficulty because of a condition of things in the manufacture of oleomargarine which did not previously exist. The Pennsylvania

statute permits the sale of oleomargarine uncolored, upon the payment of a license fee to the state, but we have recently discovered that the manufacturers of oleomargarine have found a process by which without the addition of any foreign coloring matter, their product can be put upon the market with a distinctly yellowish tinge or color and thereby may be mistaken for butter by the unwary. Of course, the statute requires all oleomargarine to be sold as such and not as butter and to be distinctly stamped, not only upon the original package, but upon the package sold. Nevertheless, our department has been having considerable trouble because of this yellow or yellowish oleomargarine. Whether or not we can constitutionally prohibit its sale will be determined by our Supreme Court in a case to be heard very shortly.

The second essential in the enforcement of our pure food laws and probably the most important in many respects is a wholesome public sentiment requiring and demanding the enforcement of the laws. With some exceptions in reference to locality, this we have in Pennsylvania. The result achieved in this respect is largely due to our great metropolitan newspapers which almost without exception have earnestly and effectively supported the efforts of the department to secure the enforcement of the law. In Philadelphia notably, the great morning dailies have for months past been giving the widest publicity and the heartiest commendation to the work of the department in that city and throughout the state. This attitude of the press has been deserved by the untiring energy and fearlessness which has characterized the administration of the office of dairy and food commissioner, charged with the enforcement of most of the pure food laws. The attack has been made upon the very strongest and those apparently best entrenched politically and financially. Leading brewers have been compelled to answer for the use of salicylic acid or its derivatives in their beer and a large traction company has recently had a number of cases against it for the use of impure fruit syrups in the soda water sold at one of its suburban resorts. These cases coupled with a crusade on meats and milk, embracing the entire state has lead to such an aroused public sentiment in favor of the law on the part of the common people that no politician or no political party dare in Pennsylvania to-day place himself or itself on record in any way except squarely in support of the enforcement of our pure food laws. This sentiment is the more noticeable and remarkable in that it is an almost complete reverse of public opinion within the last few years. The credit for the change belongs to the commissioner who has so vigorously enforced the law; to the secretary of agriculture, and the governor of the state who have so earnestly supported him and to the newspapers—city and country—which have given the widest publicity in their news columns to the food frauds that have

been exposed and the heartiest commendations in their editorials for the commissioner, the administration of the law and the law itself.

One of the greatest difficulties which in the practical administration of our food laws we have encountered is the lack of authoritative definitions of food terms and products? This was recently brought to my attention in a very striking manner by a large number of analyses of ice creams from samples taken in the city of Philadelphia. The results of these analyses were submitted to me with a request for recommendation as to prosecution. Some of them contained formaldehyde as a preservative and, of course, in such cases there was no question as to the duty to prosecute. Others were below the standard in fats necessary for even good milk, contained thickening material, coal tar and other dyes, but when we came to inquire as to a definition for ice cream and as to what it might or might not contain, we discovered the difficulty that was manifest and that probably would prevent a conviction in any of these cases. There was no legal definition of the term and even the definition adopted by the Association of Agricultural Chemists was so loose and permitted such a wide range of variety in the constituents of ice cream that I unhesitatingly recommended the dumping of the entire batch of analyses, with the exception of those showing formaldehyde into the waste basket. We have frequently encountered the same difficulty in many other compound food products.

Our drug act in Pennsylvania adopts the definition used in the American Pharmacopoeia. As to whether that act is entirely constitutional in thus adopting wholesale a list of definitions without embodying any of them in the act may be a very serious question. We hope in future legislation to fix some food standards that will be fair and just to the manufacturer and adopt some definitions to the end that the work of the department in enforcing the law may be made facile.

In a general way I may say that our laws are as well enforced at this time as probably those of any state in the Union. To some extent we have been hampered by the lack of proper food legislation or its enforcement in some of our neighboring states and Pennsylvania manufacturers have a right to complain that our laws have stricter requirements than those of many of our neighboring states, so that they are forced into unequal competition in the sale of their goods with concerns located outside of the state, not subject to the same police control by the local authorities. To correct these evils, we earnestly hope that the time may come when by national and state legislation, there shall be absolute uniformity of law throughout all the states of our common country.

Politics in Pennsylvania and doubtless in some respects in many states has seriously interfered and crippled the administration of the law, but I

am glad to say to-day in Pennsylvania that the department having charge of the enforcement of pure food law is managed as absolutely non-political as any large business establishment in this country.

In the past the commissioner, having charge of the enforcement of the food laws thought it necessary for the department to pass upon the labels of manufacturers and to say which did and which did not conform to the Pennsylvania law. Officers concerned in the enforcement of the law, likewise sometimes wrote letters to manufacturing concerns concerning food products of those concerns and the attitude of the Pennsylvania law toward said products, but it was found by experience that some unfair and dishonest manufacturers were taking advantage of these letters and by garbling them, to make them say words commendatory of the particular product of the manufacturer in question. In one case, a garbled extract from a letter of distinguished counsel for the state was found placed upon the head of a wine or whisky barrel under a statement that the contents of the barrel were approved by the pure food authorities of Pennsylvania and conformed to the law of that state. The contents of the barrel in that particular case was a blackberry wine made without the use of any blackberries, colored with coal tar dye and preserved with salicylic acid. The experience of the department in dealing with manufacturers has been such that nowadays when a letter is received from any manufacturing concern asking for information in reference to Pennsylvania law, it is replied to by enclosing copy of the pure food laws and stating that the department does not interpret these laws, as that is a matter entirely for the court, and that if the writer has any doubt as to the meaning of any part of the laws, he had better consult an attorney.

MR. EMERY: Is it not a fact that you have to-day some working theory as to what your law is? You have to form a theory, do you not, as to whether this prosecution is to be made now, in this particular case or not?

MR. WOODWARD: Well, we have to determine whether there has been any violation of the act of the Assembly or not, if that is what you mean.

MR. EMERY: Isn't that essentially a ruling?

MR. WOODWARD: By the commissioner?

MR. EMERY: Yes.

MR. WOODWARD: No, sir. What I have reference to is, of course, the commissioner shall determine whether there shall be a prosecution in any particular case or not.

MR. EMERY: If he is prosecuted, it is because in that particular case there has been a violation of law.

MR. WOODWARD: The difficulty in Pennsylvania was, that there was no uniformity on the part of the administration of the office of Dairy

and Food Commissioner in reference to labels. There was a conflict sometimes between one commissioner and another with reference to what was and what was not permitted. Nowadays the Dairy and Food Commissioner in Pennsylvania does not undertake to say what shall be the proper label and what shall not. He refers them to the law and makes them test it themselves, puts the burden upon them.

MR. JONES: Suppose a label was submitted to your department as to whether it was a proper label or not, would you pass upon the label?

MR. WOODWARD: We would not pass upon it at all, but simply send them a copy of the act of the assembly and let him pass on it himself.

MR. ALLEN: Don't you believe that the manufacturer or the wholesaler who is not intentionally violating your law should be allowed to comply with the law and that you should co-operate with him in doing so before you bring his case to the attention of the court?

MR. WOODWARD: Of course that is true, but our experience has been that there has been so much chicanery on the part of manufacturers and so much opposition of the department, in the letters that have been written and otherwise, that we have simply washed our hands of the whole business and put the responsibility upon them.

CHAIRMAN BAILEY: The next address is by the Commissioner of South Dakota, Mr. Sherwood.

#### ENFORCEMENT OF FOOD LAWS IN SOUTH DAKOTA.

##### ADDRESS BY C. P. SHERWOOD, COMMISSIONER.

In South Dakota the history of food law enforcement covers a period of three and a half years. Five years ago last winter a food bill was introduced in our legislature for the first time in the history of the state. The bill was not as carefully drawn as it might have been, but it was a very good one nevertheless. The bill met with some opposition but it became a law.

In the main the law is similar to the Minnesota law. One feature at least is an improvement over most food laws. I refer to the six paragraphs specifying what constitutes adulteration. These are made to cover all food products instead of being repeated in the case of each separate article. For this reason we are not limited to certain articles of food, but can exercise jurisdiction over all. Aside from this general provision we have special provisions covering food jellies, lard, vinegar, spices, condiments, honey and candy, also oleomargarine.

This law was put upon the statute books and no doubt the members of the legislature went home with a consciousness of having done their full duty. Later developments proved that they had but half done their duty. The law would not enforce itself.

As might have been expected there was little improvement in the quality of foods during the next two years. A few manufacturers who had been accustomed to working under food laws in other state made an attempt to meet the requirements of the new law, but they found that they must be their own interpreters, and that no two firms would read the law the same. Also that those who did not choose to comply were not made to. The result was that before long all were back in the old rut and the law practically a dead letter. The necessity of the establishment of a food department was recognized by our governor, who asked that the legislature make the necessary provision.

In 1901 a bill was introduced providing for a dairy commissioner and an elaborate law for him to work under. This met with opposition because of the size of the appropriation necessary to carry out its provisions, and a compromise was effected by a combination of the food and the dairy interests, and a bill introduced for a less elaborate dairy law and a commissioner to have the enforcement of both laws. This was passed with the necessary two-thirds vote.

The writer was appointed commissioner in March, 1901, and instructed to organize a department and proceed to enforce the law. This was easier said than done. The total sum appropriated for the purpose of defraying the expenses of the office such as rent, fuel, stationery, postage, traveling expenses, and fees for analyzing samples was sixty dollars a month.

How to accomplish anything with so limited an amount to work with was indeed a problem. The first conclusion reached was that enforcement by the usual methods—court prosecution—was out of the question. In order to treat all alike enough deputies must be put in the field to frequently inspect all stores, and suits must be brought against all violators if any were brought. This would mean a heavy expense for special attorneys and expert witnesses, which the counties would not be willing to stand. Unless there was some other way it would be useless to make the attempt.

We ask your indulgence while we briefly outline the plan that was adopted and note some of the results attained.

Copies of our food laws were mailed to jobbers and manufacturers whose goods were being sold in our state, with a circular letter asking a compliance with its provisions. This letter was intended merely as an advance notice, in order that no undue advantage might be taken. A deputy was appointed and store inspection was begun, in

order that we might know what was in the field. Samples were taken as generally as seemed advisable and these went to the agricultural college at Brookings for analysis. We had no provision for a chemist, but could pay for the analyses out of our fund. Prof. Shepard took pity on us and consented to do the work for a nominal fee, which arrangement has proven very satisfactory as far as the department is concerned. The report of the chemist was entered in a permanent record book and a copy sent to the three interested parties—the retailer, the jobber and the manufacturer. A notation was made whether legal or illegal and a personal letter gave instructions as to the disposition to make of the illegal goods.

Periodically bulletins have been sent out to interested parties, the trade journals and state dailies. These gave a list of the samples, the manufacturer's name and the analysis. Our plan has been one of education. But we reserve the right to take sterner measures when necessary, and if our reasonable requirements were not complied with would certainly take the matter into court if the party could be reached.

Now as to the result of three and a half years' work under our plan.

The colored grain vinegar is no longer in our state. Pure cider vinegar has replaced it, and we seldom now find an illegal vinegar, and when we do it is merely low in acid or solids. The spurious vinegar salesman no longer solicits orders in the state. One manufacturer who had nine samples condemned, all of them grain vinegar colored to imitate cider, charged us with having ruined his business and forced him to sell out. His letter was read with great satisfaction. He is no longer with us.

"Lard compound" is no longer found on the market in the Northwest. Instead "lard substitute" with the ingredients given on the label in large type. This was accomplished by a personal visit to the packing houses that were shipping this tallow and cotton seed oil combination into our state.

Glucose goods are now sold under a label giving the ingredients and the per cent of each. Formerly it was "pure sorghum," "rock candy drips," etc. This was a result of correspondence with the manufacturers.

Jams, jellies and preserves are not artificially colored and if a substitute has been used for sugar it is so stated on the label.

Corn is canned without being first bleached, and no antiseptic used. Saccharine is not used in place of sugar. Canned fruits are not made "pleasing to the eye" by the use of coal tar dye. Strained honey is no longer composed largely of glucose. Extracts are improving. We have not run on to methyl alcohol in lemon extract for some time. We have not as yet insisted upon a U. S. P. standard lemon extract, but do insist that a reasonable per cent of lemon oil be used. The artificial soda

fountain and pop factory extracts, composed of coal tar dye and salicylic acid, diluted with water and sugar, are being weeded out.

And last but not least, catsups are not artificially colored. And you will, I am sure, pardon me for taking time to go a little into the history of this catsup controversy.

Those who were present at the Portland meeting two years ago and the St. Paul meeting one year ago will remember that the subject of artificial coloring in tomato catsup received a great deal of attention. Representatives of the manufacturing interests present insisted that in the wholesale condemnation of artificial coloring in food products a great injustice would be done the manufacturer if an exception were not made of catsup. That in the process of manufacture the natural color was lost and must be replaced by artificial means in order that the goods be salable. I quote from a letter penned by Mr. Chas. H. Loudon of Cincinnati and read at the Portland meeting: "Foods, like other goods, are bought as they appear attractive to the eye. A red catsup is more attractive than a dirty, muddy brown color, and no matter how thoroughly ripe and red the tomatoes are, the process of cooking down 150 gallons of tomato juice to 50 gallons of catsup to get the proper consistency kills the color and artificial color is needed to restore that destroyed by the process of cooking. Again in an address before the St. Paul meeting Mr. Loudon said: "In making catsup I take the juice and meat of sixteen bushels of ripe tomatoes, making about 100 gallons of fluid pulp, and cook it down to 45 gallons to get the body or density required for catsup. This severe cooking necessarily kills the color to some extent and subsequent exposure of the goods to the light would further affect the color if an artificial color were not added. It is not very material to us whether we use carmine or the refined synthetic colors, but we feel that coloring matter of some kind is required to make the goods attractive in appearance and to meet the demands of the public who call for a red catsup in preference to the natural color just as they call for colored candies in preference to those without artificial coloring."

The position taken by Mr. Loudon was indorsed by other manufacturers and the protest against the prohibition of coloring in catsup was general.

Few if any of the commissioners had any knowledge of the business of making catsup, but all had seen the kind that mother made which had looked good to them, and that had no coal tar dye in it. The commissioners of the Northwest got together on a proposition to force the manufacturers to at least experiment with an uncolored article, and accordingly about the first of August each issued a circular forbidding sale in their state of catsup colored artificially unless labeled adulterated, exempting from the order goods made prior to 1903.

This order has been faithfully complied with by

nearly all of the catsup manufacturers. Those who have used color so stated on the label, but as their goods have been pronounced illegal they have lost practically all of their business in our state.

A few weeks ago we sent a letter to a few of the manufacturers asking their opinion of uncolored catsup, after a year's trial. The replies have been very satisfactory indeed. Not one asks to have the order rescinded. As we have already quoted Mr. Loudon it may be of interest to know what he says, and we are sure he will pardon us for quoting from a personal letter.

"I have your favor of the 5th regarding my present opinion as to the use of artificial coloring in catsup, and would say that when we talked this matter over and fought it over in St. Paul you were right and I was wrong. I think that tells the story in a nutshell, and I don't hesitate to acknowledge myself mistaken when my mistake is as clearly proven as it has been on this color matter. I was entirely sincere in saying at that time that I believed the consumers wanted a bright colored catsup, and to a certain extent I believe that is still the case, but I have found that by using nothing but fully ripe, red tomatoes and handling them in the most careful manner from the time they are washed until they are finally converted into catsup and bottled, I can retain the natural color of the goods to a very great extent and produce catsup that is more attractive in appearance to my mind than the highly colored goods I formerly turned out. My experience of last year and of the present season justifies me in saying that when proper materials are used and properly handled, the natural colored goods will have the preference over the artificially colored with high class trade."

Right here let me say that as far as I am concerned the prohibition of color was not because of the harm the color might do, but to prevent the use of inferior stock. Mr. Loudon tells the whole story when he says they now have to use prime, ripe tomatoes and handle them with much care in order to get satisfactory results.

Another prominent manufacturer writes: "We have determined to our entire satisfaction that it is possible to eliminate all foreign color in the manufacture of catsup. It is our opinion that it has materially improved the character of what is known as first or high-grade catsup. \* \* \* Our sales of the first grade have largely increased. The barring of color, in our judgment, has aided to a great extent in shutting out from the market adulterated catsup. We are strongly opposed to the withdrawal of the order regarding colored catsup. \* \* \* We were of the belief up to last year that commercially uncolored catsup was impracticable, and are free to confess that we have been greatly assisted in discovering a method of manufacturing slightly uncolored catsup by reason of the concerted action of the food commis-

sioners to eliminate color from this product, for all of which we are grateful."

Still another writes: "Experience has convinced us that as soon as consumers become familiar with the fact that catsup can be had either with or without artificial coloring, they prefer it uncolored. We would regret very much to have the order countermanded."

Is it not possible that manufacturers have gotten into other ruts which they will never get out of except by the aid of the "impracticable" and "uncommercial" ideas of food commissioners?

Our aim in this paper has been not to brag of what has been accomplished in South Dakota, but to show that something can be done with a small appropriation and persistent work, unaided by the courts.

CHAIRMAN BAILEY: As Mr. Bruner is not present, I will call upon Mr. Ankeny, who is next.

MR. HOBBS: I will simply say that Mr. Ankeny wished me to present his compliments to the association, and to say that he was extremely sorry he could not respond in person, but wished you all the success possible.

CHAIRMAN BAILEY: Mr. Emery will be the next.

MR. EMERY: I have been but two years—not quite that—two years the 24th of next December—Commissioner from Wisconsin. For the six months previous to that time there was no commissioner, and on assuming the duties of the office, three days after that, the office was without a chemist, so that practically it has been necessary to reorganize the department entirely. To add to that, on the 27th day of last February, the fire in the Capitol at Madison entirely destroyed the office and the laboratory of the commission and we have been very much handicapped, but still we have been at work.

#### FOOD LAWS AND FOOD CONTROL WORK OF WISCONSIN.

##### ADDRESS BY J. Q. EMERY,

Dairy and Food Commissioner of Wisconsin.

I have been asked by the secretary of this association to present a paper on the "Food Laws and Food Control Work of Wisconsin," and in that paper to treat of the history of the department, state legislation, changes in legislation and reasons, commissioner's rulings and their changes, court decisions, general plan of organization, and the administrative policy of the department. To my inquiry as to what limitations of time were imposed, no reply was received.

I am designated on the program as "Food Commissioner." The legal title, however, of the Wisconsin commissioner is that of dairy and food commissioner—dairy being spelled with a capital

D. Pure dairy products are par excellence food products. Wisconsin is a great dairy state. According to the United States census for 1900, she contains the greatest number of creameries and cheese factories combined of any state in the Union; has the largest number of cheese factories; ranks second in number of creameries, and in the quantity of cheese produced; third in the number of farms which derive their principal income from dairy produce; fourth in the number of dairy cows, the number of gallons of milk produced and in the amount of butter produced; fifth in the farm value of dairy products and value of product of milk condensing factories.

From every standpoint, Wisconsin ranks among the most important dairy states. It was this great industry in Wisconsin that led to the establishment of the Wisconsin Dairy and Food Commission.

That commission was created by the legislature of 1889, through the efforts of the Wisconsin Dairymen's Association, and that association has ever since been the strongest friend and ally of the commission.

The distinctive purpose in view at the time was to provide a legal agency that would prevent adulteration and fraud in dairy products. The most brilliant and conspicuous achievements of the commission have been in this line. When the Wisconsin Dairy and Food Commission was created, four or five million pounds of oleomargarine annually masqueraded through the state in the garb of genuine butter. To prevent this fraud upon the producers and consumers of butter, a law was passed requiring that oleomargarine should be labeled so as to disclose to the purchaser its true character. This law remained upon the statute books for a number of years, but as interpreted by the lower courts, proved wholly ineffective in accomplishing the purpose intended. Neither purchaser nor consumer was protected.

In its stead, another law was later enacted, which prohibits the manufacture or sale of oleomargarine which shall be in imitation of yellow butter, but permits the manufacture and sale of oleomargarine which shall be in such form as to advise the consumer of its true character and which shall be free from coloration or ingredient that causes it to look like butter.

Prosecutions were brought under this law and convictions secured. From that time until now, there has been a wholesome respect for that law, and the Dairy and Food Commission has been able to restrict the sale of oleomargarine to that which is not in imitation of yellow butter. It is within the bounds of truth to state that since the enactment of the law and the early convictions under it, in no line of food products has the percentage of unlawful sales been less than in oleomargarine.

Previous to the time of the establishment of the Dairy and Food Commission, Wisconsin had gained an enviable position in the best dairy markets of the world for the quality of her cheese products. But about the time of the establishment of the commission, the practice of making so-called filled cheese became rife. Unscrupulous manufacturers of cheese would skim the cream from the milk and manufacture the same into butter and substitute neutral oil for cream in the manufacture of cheese. This enabled the manufacturers of the fraudulent cheese, for the time, to pay higher prices for milk than the honest manufacturer could pay. The result was a gross fraud upon consumers and great injury to the cheese industry of the state.

The first effort through legislation to control this fraud was to require the cheese to be branded as "full cream," "standard" or "skimmed," as the case might be, the law defining or describing each kind of cheese. This label law proved to be a failure.

Then a law was later enacted which absolutely prohibits the manufacture and sale of filled cheese in the state and also of skim-milk cheese, except such last mentioned cheese is ten inches in diameter and nine inches in height. The enforcement of this last mentioned law by the Dairy and Food Commission has completely driven the skim-cheese industry and the fraudulent filled cheese iniquity from the state and the result is purity in this class of dairy products.

Owing to the factory system for the manufacture of dairy products and the large consumption of milk in cities, other dairy laws relating to the purity, wholesomeness, cleanliness and minimum butter fat content of milk, laws requiring the inspection of dairy herds furnishing milk for city supply, including sanitary conditions of barns, wholesomeness of feed and purity of water, have been enacted from time to time as experience demonstrated their necessity. No laws for whose enforcement the Dairy and Food Commissioner is responsible, have been enforced with greater rigidity. The most strenuous work of the commission has been exerted to procure clean, pure and high class dairy products. The result has been a marked gradual improvement in the quality of milk delivered to the cheese factories, creameries and city supplies. It is now a rare occurrence to find preservatives of any kind in milk, and more and more, milk takes on a high degree of cleanliness. The application by our inspectors during the past summer of the Wisconsin curd test to these different milk supplies demonstrated that in a vast majority of cases the inspector could say with full assurance that the samples inspected were in a high degree cleanly.

At the time of the establishment of the Wisconsin Dairy and Food Commission in 1889, the laws relating to the manufacture and sale of adulter-

ated food products, other than dairy products, were very few in number and of the most vague and indefinite character.

The law prohibited fraudulent adulteration of food, drugs and medicines, but nowhere defined adulteration. The only law under which the Dairy and Food Commissioner could prosecute dealers in adulterated food products, other than those of the dairy, was a law, which prohibited false labeling of these products and provided for the prosecution of parties who knowingly violated the law. As it was practically impossible to prove intent, that law was a dead letter. As a means of setting forth this defect in the then existing food laws, and showing the conditions at the time, the first commissioner, in his first report, approvingly quotes from the New York Court of Appeals, as follows:

"It is notorious that the adulteration of food products has grown to proportions so enormous as to menace the health and safety of the people. Ingenuity keeps pace with greed and the careless and heedless consumers are exposed to increasing perils. To redress such evils is a plain duty, but a difficult task. Experience has taught the lesson that repressive measures which depend for their efficiency upon proof of the dealers' knowledge and of his intent to deceive and defraud are of little use, and rarely accomplish their purpose. Such an emergency may justify legislation which throws upon the seller the entire responsibility for the purity and soundness of what he sells and compel him to know and be certain."

After a few years, it came about that new food laws were enacted which eliminated therefrom the element of intent as being necessary to convict. The Wisconsin food laws, to use the language of the New York Court of Appeals, now throw upon the seller the entire responsibility for the purity and soundness of what he sells, and require him to know and be certain.

In 1891 a specific vinegar law was enacted and its essential features still remain in the statutes. This law provides that only the legitimate product of pure apple juice can be sold as cider vinegar; that no injurious ingredients shall be used in the manufacture of the same; that the standard strength shall be denoted by the per centum of acetic acid, and shall not be less than four per cent, and cider vinegar shall not contain less than two per cent of cider vinegar solids; that manufacturers and reducers and persons who handle vinegar shall brand upon the head of the barrel, in letters not less than one inch, the per centum of acetic acid.

This seems a reasonable and easily understood law. Manufacturers who have consulted the commissioner have, with scarcely an exception, expressed the most eager, and almost yearning desire to comply with its provisions. There have been circumstances, however, that have led us to

suspect that in some cases this yearning desire on their part was most strenuous at the time of consulting the commissioner, or when cited to appear in court.

While conditions have been greatly improved during the passing years, it must be admitted that the commission has never yet seen the time when it was fully assured that there was no opportunity for effort in this field.

At the session of the legislature in 1897, the first general law was enacted defining adulteration of foods and drugs. The law embodied the main features of the pure food law then in force in Ohio, Massachusetts, and other states, and which have in the main been incorporated in the various pure food bills proposed in Congress. The law contains the usual seven definitions of adulteration.

The condition of affairs at this time were comprehensively set forth in a paragraph in the commissioner's report for that year, as follows: "The most common violations of the pure food law have been the sale of low wine vinegars for cider vinegar, of glucose syrups for cane syrups, of wheat middlings and low grade wheat flour for buckwheat flour, of lemon and vanilla extracts containing no lemon or vanilla, of artificial jellies for pure fruit jellies, of all manner of adulterated spices for pure spices, of prepared meats containing chemicals injurious to the public health, of coffee essence that does not exist, of cottolene sold for pure lard, of coffee and chicory sold for pure coffee, of imported canned vegetables colored or treated with poisonous chemicals, of alum baking powders sold for cream of tartar baking powder, and of honey adulterated with glucose.

Adulterations had become so common and widespread in many articles of food that it was deemed impossible by many sincere men in the grocery trade to eradicate them by any law that could be defined."

The enactment of this general law on adulteration of foods, at first brought great consternation among grocers, both wholesale and retail.

The commissioner met the situation by calling representatives of the Wisconsin Wholesale Grocers' Association together in a conference with himself. The law and the conditions were fully discussed. This meeting materially aided the commissioner in reaching his interpretation of the law in his rulings which he soon published. The Wholesale Grocers' Association aided the commission in sending these rulings and the food laws to the retail dealers throughout the state. This conference with the Wholesale Grocers' Association resulted in the loyal support by that Association of the Dairy and Food Commission in the enforcement of the food laws from that time until now.

As at first enacted, the proviso to the general food law was as follows:

"Provided, that these provisions shall not apply to mixtures and compounds recognized as ordinary articles of food, if the same be distinctly labeled as mixtures or compounds, and from which no necessary ingredient in their preparation is eliminated."

This proviso affected the character of every provision of the law. It proved to be too vague and indefinite to be sufficiently effective. To determine just what mixtures and compounds were "ordinary articles of food" was an extremely difficult undertaking. To determine that no necessary ingredient in their preparation had been eliminated from those mixtures or compounds that were "ordinary articles of food" was no less difficult.

Therefore, a change was sought and procured in the proviso, which now is as follows:

"Provided, that articles of food which are labeled, branded or tagged in a manner showing their exact character and composition and approved by the Dairy and Food Commissioner of the state, and not containing any poisonous or deleterious ingredient, shall not be deemed adulterated in the case of mixtures or compounds sold under their own distinct names or under coined names, and which articles, if substitutes, are not in imitation of, or sold under, the name of any other article of food; and

Provided further, that nothing in this act shall be construed as requiring or compelling proprietors or manufacturers of proprietary foods to disclose their trade formulas, except so far as may be necessary to secure freedom from adulteration, imitation or fraud."

This proviso had the effect to modify quite materially the character of the general law, and rulings by the commissioner were made corresponding with the changes effected. By this new proviso, the labels on mixtures or compounds, to comply with the law, must be approved by the Dairy and Food Commissioner. In his rulings, he has indicated the character of the labels he is willing to approve. The proviso also excepts "imitations" from the possibility of legal sale. Legitimate substitutes, if not imitations, are recognized by the law. The law seems to presume that deception and fraud lurk in imitations.

A brief paragraph must suffice as to the organization of the commission. The law creating the commission was enacted in 1889. The Commissioner, and Assistant Commissioner or Dairy Expert, and a Chemist, comprised the commission until 1895, when a dairy inspector and a stenographer and confidential clerk were added. No further additions were made until 1903, when an assistant chemist, a creamery inspector and a food inspector were added, and the commissioner was also authorized to employ as his "Expert Agents" for the inspection of creameries and cheese factories, the three traveling instructors in cheese making and butter making that are em-

ployed and paid by the Wisconsin Dairymen's Association. This law practically confers upon those instructors all the police power possessed by the commission, and adds three inspectors to the force of the commission, which is co-operative effort to the mutual advantage of all concerned. When called upon by the commissioner or any one of his assistants, the district attorney of each county is required by law to prosecute cases brought by the commission under the Dairy and Food laws. The commissioner, with the advice and consent of the governor, is authorized to employ special counsel for the prosecution of any case involving adulteration of dairy products. It is a weakness in our law that a similar provision does not extend to cases involving any kind of food products.

The salaries of the officers of the commission and their traveling expenses, and all other expenses of the commission, are paid out of the general fund of the state. The salaries are fixed by the legislature. Under the constitution of our state, the fines collected go into the state treasury as a part of the school fund. Neither the commissioner nor any of his assistants can have any interest, direct or indirect, in the amount of fines collected. Neither the continuance of the life, nor the effectiveness of the commission is in any way affected by the amount of fines collected.

The administrative policy of the commission embraces the following agencies: Education, publicity, warning, prosecution.

The agency of education has been employed in furnishing manufacturers, dealers and the daily newspapers printed copies of the dairy and food laws of the state, and the interpretation of the meaning of those laws as expressed in rulings. Numerous circulars have been issued in explanation of the laws, in their application to various adulterated food products found upon the market. When the conditions in the laboratory admit, analyses of suspected articles are made on the application of dealers or consumers and reports of results of such analyses returned.

The agency of publicity has been and is employed. In the biennial reports of the commission, the results of the chemist's analyses have been published. Adulterated articles have thus been brought to public notice, and to the attention of dealers. The information thus brought to public notice through the biennial reports, proving to be too slow to be of greatest service in reaching those most concerned, the passage of a law was procured in 1903, which authorized the commissioner to issue quarterly bulletins, in which shall be reported the results of the chemist's analyses and of inspections. The ten thousand copies of this quarterly bulletin are supplied to manufacturers of and dealers in food products and to the daily press. This agency is proving

to be a potent force in lessening adulterations and in exposing deception.

The commission has employed the agency of warning dealers who have manifested a sincere desire to comply with the pure food laws, and who have for want of ready means of informing themselves as to the character of certain deceptive products, been found selling the same in ignorance of their unlawful character. The sincere desire on the part of most dealers to be law-abiding citizens is one of the strongest aids to the commission in securing general compliance with dairy and food laws. Efforts to cultivate and strengthen this desire have been made and is energy well and wisely spent. The spirit of law-abiding citizenship in food dealers is to be cultivated and relied upon by the commission.

Prosecutions of willful and persistent offenders is the agency of ultimate resort to enforce compliance with food laws. This agency, too, it is the policy and practice of the commission, in compliance with the mandates of our law, to invoke.

As time passes and dealers become familiar with the provisions of the statutes, this agency must be increasingly employed.

Cases involving violations of the pure food laws are brought before justices of the peace, or in municipal courts, having like jurisdiction. If the Dairy and Food Commission fails there is no appeal to higher courts. Because defendants that have been convicted in justice court have never appealed, no cases involving the pure food laws of Wisconsin have ever reached the Supreme Court. For that reason, Wisconsin has no "court decisions."

Wisconsin has not reached a pure food millennium; but she has made great progress in reducing to a minimum the adulteration of dairy and food products. The excellent work she has done as a beginning furnishes ground for belief that still greater success in this line awaits her future efforts.

CHAIRMAN BAILEY: We will hear from Mr. R. O. Eaton next, Deputy Commissioner from Connecticut.

MR. EATON: Mr. Chairman, the Secretary has invited me to write upon the enforcement of law. I want to inform you all in the beginning that I am not a lawyer, but that I am simply a plain farmer.

#### ADDRESS OF MR. R. O. EATON.

*Mr. Chairman and Members of the Convention:*

#### THE ENFORCEMENT OF LAW.

Amid all the improvements in every line which yearly are crowding thick and fast upon the time of the busy American of this day and generation, the pure food laws, fraught with vital interest to the highest and the lowest, the statesman and

the day laborer alike, are demanding more every year the careful consideration of the intelligent members of the community. Why should this agitation be started to protect those who through carelessness or ignorance do not care for themselves? Why interfere with the business of those who are trying to keep pace with this age of adulteration in more lines than food? Why not allow the people to drink milk from the village pump if they do not know the difference, are some of the many questions flung at a dairy and food commissioner by those who, for one reason or another, have attempted to stem the tide in the direction of pure food.

It is as well to be understood here that the honest dealer, striving to do a legitimate business, has nothing to fear from the pure food laws of our states or from any commissioner. It is for the other class that we are reaching out and the need of this is apparent to those who read the annual reports sent out from our various agricultural experiment stations and the Dairy Commission department. If the adulteration of these days was limited to the wooden nutmeg variety, from which my own state derives its name, we could well leave it to the keen housewife of New England to detect; but, unfortunately, the shrewd Yankee—not to mention the acute Southerner or hustling Westerner—is not satisfied in these days with playing tricks with one of our spices, but must needs tamper with everything our cooks use. The chemists of our experiment stations tell us—and it is on their sworn statement, by the way, that we in Connecticut depend for conviction—that no one is safe from this fraud from the infant in arms feeding on milk two-thirds of which may be obtained from the barnyard well, to our old people delighting in their cup of tea, which may be brewed from plantain leaves or, worse still, a senna mixture. It is then for the interest of the people of all grades of society, all stations in life, so to speak, to see that pure food laws are enacted. That such laws are aimed to antagonize legitimate business is one of the prejudices hard to overcome. On the contrary, the effect is just otherwise on the merchant seeking to sell a good article at a fair margin of profit. The pure food or dairy commissioner is working in his interest and for his welfare, and not from any personal, selfish or financial interest.

With pure food laws on the statute books, their success then depends on the enforcement. It is just here that the duties of the commissioner come forward for consideration. On the co-operation of the public and the merchants depends largely whether the commissioner's career shall be meteoric and he, like the satellite, soon sink out of sight, leaving the laws he represents to become a by-word, or whether his position as a valuable member of the community shall gain in importance as the years fly by. Let it be clearly

understood at the outset among manufacturers, dealers and general public that the laws are not made for persecution, and that the state treasury is not dependent on the fines following prosecution! Especially, let the people realize—for it is upon public opinion, after all,—that success depends—that the pure food laws were passed for their benefit and protection and not to afford the commissioner an opportunity to earn the small salary he receives.

In the enforcement of these laws, it must be borne in mind that dealers are almost as frequently imposed upon by tricky manufacturers as are the consumers. When examination proves that an article is a cheap imitation or an adulteration, we, in Connecticut, notify the dealer to that effect. A record is kept of the first offense and if, on a second inspection, a similar condition prevails, then prosecution follows on the ground that a second offense is a violation with knowledge.

As I have already stated, in Connecticut we are materially assisted in our work by the officers of the Connecticut Agricultural Station, whose chemists examine and report to the commissioner. Upon their sworn statement we prosecute. We have always exercised considerable care in bringing cases, for, if we realize that we have a weak case to handle, it is better policy to drop it than to fight a losing cause. A defeat to a commissioner in prosecuting a case has a tendency to lessen the effectiveness of the very law he was striving to enforce. As all violations of our pure food laws come under criminal prosecution, it is necessary to always prove our cases by good, substantial evidence of sale. The mere fact that a person has adulterated goods in his possession is not always accepted by the judge or jury as sufficient evidence on which to convict. Hence, inspectors must use excellent judgment and tact in securing the proper evidence for the successful enforcement of the law.

A serious handicap in this fight oftentimes is a too heavy penalty for the violation of the pure food laws. In cases where there were mitigating circumstances entering into the evidence, and the judge had only a heavy maximum penalty to impose or a discharge, we have frequently been known to lose through the court not wishing to impose such a heavy fine. Whereas, if a smaller fine could be given, the evidence would be sustained. Small fines and costs would be frequently the verdict in such cases were the fines graduated and the court at liberty to choose between them. It is said that at a certain period of England's history the death penalty was given for many crimes. Finally a change had to be made, as no convictions could be secured, so strong was public opinion against the law.

People may, when they reach the age of discretion, indulge in certain adulterated foods and liquors if they choose, but public opinion comes

forward to protect the young, the helpless and the ignorant and place beyond their reach such adulterated goods as may prove extremely detrimental. It was public opinion that drove the original vender of wooden nutmegs across Connecticut's border into New York state, and it is that same public opinion that to-day drives pulverized stone as a substitute for baking powder out of that same New England territory. This and similar instances are what encourage the commissioner to feel that the verdict of the people at large is with him.

The long list of virtues necessary, according to Will Carleton's humorous view of the situation, for success in the editorial sanctum, are only a few of those needed in a commissioner's office. The office of a dairy or pure food commissioner is virtually a political one and a commissioner frequently changes with a new administration if he does not happen to be in with the victorious faction or party. In some states the candidates for the office have to go into a campaign for the nomination at the state convention, and quite naturally they strive to be popular with the people, both to secure the nomination and also the election. It is quite safe to say that a commissioner is always on the lookout to save his friends, if possible.

During an experience of nearly thirteen years in Connecticut many peculiar cases have come to our notice. It has frequently been necessary to prosecute cases where we have been told by men of influence that if we did not drop them our heads would come off; and, again, on the other hand, have repeatedly been warned if we did not make more prosecutions a new commissioner would be appointed. There is but one way out of such a situation: that is, to forge ahead, using the best judgment possible, and to take plenty of time before making a move which may mean your undoing if carried through hastily. When a conclusion has been arrived at, there is but one path open and that is to stick to your decision even if every politician of influence in the state is pulling at your coat tails to have you let up. The commissioner cannot afford to be an autocrat or dictator any more than he can allow himself to be swerved by political methods, and officiousness is no more to be tolerated on his part than is mal-administration of his office in other directions. He should, above all else, establish a feeling of friendliness between the dealer, the consumer and himself and a co-partnership should be formed between the three having for its principle co-operation for the common good. In other words he should be a diplomat trained in the school of experience. Then, and not until that period, can a commissioner successfully enforce the pure food laws.

CHAIRMAN BAILEY: Another good paper. Now we will hear from a man from the Pacific

Coast, a man who has come 3,500 miles to attend this meeting, Hon. E. A. McDonald, Food Commissioner of Washington.

MR. McDONALD: Mr. Chairman and Gentlemen—When I was asked to prepare this address, I looked over the number of addresses which were to take place during the afternoon session and I made up my mind it was necessary to condense my remarks and to make them as short as possible, and to give my experience and opinions.

#### ADDRESS OF HON. E. A. McDONALD. ENFORCEMENT OF LAW.

I am pleased to be present at this Congress to aid in the solution of one of the greatest problems of the twentieth century the purity of the food supply. To the unthinking inexperienced mind it is very simple, but to those of us who have been in the campaign against adulterated food for a number of years it is more complex. I can recall how important I felt when I graduated from the high school. I considered that my opinions were of great value. I recall that after four years I graduated from the university. A great change had taken place. During those four years I had taken a peep into the great fields of learning and began to realize that I was yet in the A B C's of education. So it has been my experience in regard to pure food education and legislation. I have been in the work for nearly eight years, first as dairy commissioner, second as state dairy and food commissioner and third as state dairy, food and oil commissioner. When I was appointed, I felt my importance and believed that I would soon drive all adulterated food from the market. I believed that the problem of pure food was very simple, but after eight years I find I am in the A B C's. The pure food problem is yet unsolved or we would not be here to-day. It is a complex question requiring scientific research to settle the many questions which are involved. The first dairy law was enacted in the state of Washington in 1895. It was amended in 1899. The first pure food law was enacted in 1899 and was amended in 1901. I have been commissioner during all this period except the first two years, so that the different stages of progress are known to me. Dairy laws are the forerunners of food laws. The first dairy law was enacted to protect the dairy industry against the fraudulent sale of oleomargarine. It was effectual as colored oleomargarine was driven from the market. The uncolored oleomargarine is still sold but in very limited amounts. The dairy law was amended in 1899 to prevent the sale of eastern butter from being sold in the state of Washington for Washington creamery and to compel dealers in renovated butter to mark it so that the consumer would have knowledge of the character of the product he was buying. The amended law had the desired effect so

that to-day Washington creamery butter is protected by a uniform state brand which cannot be used on other than Washington creamery butter. Renovated butter is sold for what it is. The federal law regarding the sale and markings of renovated butter is so complete that there is almost no necessity for state regulations unless to see that the national law is not violated. The first food law was enacted in 1899. It was general in its provision so that it was necessary for the commissioner to publish rules and regulations for the guidance of the trade. In the preparation of those rules and regulations I had recourse to the rules and regulations of the commissioners of older states, where the law had been enforced for a number of years. I have found, however, that the commissioners of the older states did not agree in their rulings so that it was necessary for me to become an eclectic. I gathered all the information I could from all sources and published my rules and regulations. After my rules and regulations had been placed in the hands of the trade, I made a tour of investigation throughout the state to find out the sentiment of the dealers in food products and the amount of adulterated food on the market. I estimated that there was about seventy-five per cent of adulterated food within the meaning of the act. The percentage which could be pronounced injurious to the public health was not large. The largest part of adulteration was fraudulent mixing or branding. The sentiment of the trade was in favor of the law providing they were allowed to dispose of the foods already purchased. After my investigation, I published in the press of the state that no foods would be confiscated which were purchased prior to the enactment of the law. But all goods purchased thereafter which did not conform to my rules and regulations would be confiscated or the party selling the same would be prosecuted. I recommended that the grocers in the different cities organize and I would be present to give what information I had to guide them in their purchases. Organizations were perfected in all the larger cities of the state and at my recommendation a resolution was adopted that every grocer demand that the manufacturer or wholesaler give them a written guarantee that the food sold to them conformed to my rules and regulations. This was an effectual blow. During the next six months there was a great change in the quality of the foods found on the shelves of the grocers. The policy I adopted was more effectual than prosecution. A very small percentage of the trade are willful violators of the law. After five years of aggressive work the markets of Washington are practically free from adulterated food as prescribed by my rules and regulations. I have always been broad in the enforcement of the pure food law believing that the work was one of education rather than legislation. The trade de-

mand and have a right to demand that a clean-cut line be drawn between adulterated and unadulterated products. It has been impossible to make such a division owing to the laws of the different states. This can only be done through a national law and the adoption of standards for different foods. I shall continue my work more as an instructor than as a criminal officer. I do not wish to be understood that I do not believe in stringent regulations in regard to the sale of foods, but I do say that it is a greater crime to exaggerate the conditions than to minimize them for the reason that the mind has such an effect on assimilation of food that fear of injurious foods may be worse than the food itself. There are a number of questions that must be settled by some competent tribunal before the foods can be completely regulated. State legislatures cannot provide for such work for the laws regulating the sale of foods are as different as the number of states having such laws. The laws of the different states are interpreted by the commissioners giving the greatest leniency where the raw material is the product of that particular state. We must look to the federal government for the solution of this question. Some states permit the use of preservatives and other prohibit them, some permit certain preservatives and condemn others. Some states permit coloring, others prohibit it. Some states permit vegetable coloring when it is used to place a uniform product on the market. Some states permit the use of copperas in peas, saccharine in sweet pickles, others prohibit their use. Some states demand the formula, others demand that only the ingredients be printed on the package. No two states agree on all questions. I am of the opinion that preservatives have a legitimate place in the food supply. I believe that more people have been poisoned by decomposition than have been poisoned by the use of preservatives, therefore, it is not a question of prohibition but of regulation. If preservatives are prohibited a large amount of meat which is now consumed will be destroyed and the price of meat will increase in proportion to the amount destroyed. It is to the credit of the American people that the working classes use more meat than any other nation. Shall we then have legislation which will deprive the poor man of his meat or shall we rather regulate the sale so that the consumers will know what they are eating. I have never been an advocate of prohibiting the use of color in food products for the reason that the appearance of the food has a great deal to do with digesting. If you go out in St. Louis and meet a half dozen Chinamen, you will form some idea of the monotony of similarity of dress. The same will hold good in regard to foods, providing that coloring is prohibited. I believe that foods should be made attractive as well as dress and no one could present an argument in favor of no color

in wearing apparel, except he believed in the retrogression of the race. I am a believer in pure healthful products, manufactured under government inspection so that the raw material may be inspected before manufactured. If such was the case color would only be added to place an attractive and uniform product upon the market. Circular No. 18, Bureau of Chemistry, Sec. 13, under illustrations, provides, "if pease and beans have a portion of copper the label should state that fact." You will notice from reading this circular that the Department of Agriculture permits the colored product to be imported, providing that the package is marked. I deem it wise for each state to adopt the same rule and regulations as the Department of Agriculture and also the food standards prepared by the members of official agricultural chemists and adopted by the Secretary of Agriculture. This would place the state laws in harmony with the federal law. I hope to have our law amended by the next legislature to conform to the rules and regulations of the Department of Agriculture. Before closing, I wish to state my experience in the enforcement of the law. I am a believer in confiscation rather than prosecution, prosecution is too slow and uncertain. Furthermore justices of the peace and juries are not always competent to render a just verdict, owing to the technical and scientific questions involved. Juries are also influenced by prejudice and cannot understand the value of certain restrictions; in many cases they render a verdict according to their beliefs rather than according to evidence. The officer having in charge the enforcement of food laws should be clothed with power to seize and confiscate by order of the court any food products not up to the standards. Confiscation would not necessarily mean that the product should be destroyed, unless it was injurious to the public health. If the product could be properly labeled it could be sold and the proceeds go into the food fund. The defense would have an opportunity to appear in court and make their argument before the court issued the order. This would be sufficient protection for the manufacturer or dealer. Our food law provides that if a grocer has a guarantee from the wholesaler or manufacturer from whom he purchased the foods, he is exempt from prosecution and the party who sold him the foods becomes amenable for the sale. In many cases the manufacturer or dealer lives in another state and it is impossible to secure service on them. If confiscation instead of prosecution was the method in enforcing the law the foods could be confiscated and the object of the law would not be defeated. There are a great many questions which I would like to discuss, but time will not permit as the program is noted for its length. I have endeavored to give you some idea of my views which I trust will be of some benefit in

bringing the commissioners to adopt uniform rules and regulations.

CHAIRMAN BAILEY: Mr. Heiner is indisposed and has requested me to hand his paper to the Secretary so that it will appear in the record, which I will do.

#### ADDRESS OF HON. MORONI HEINER.

*Mr. President, Ladies and Gentlemen of the Convention, and Friends:*

It gives me pleasure, as representing and speaking for the youngest commonwealth in the sisterhood of states, to report upon the enforcement of the pure food law in Utah. It is not yet nine years since we became a full-fledged member of the federal family, but during eight years of those nine our particular department has been in active and, I trust, beneficent operation. My predecessor as commissioner, Hon. H. J. Faust, being himself an experienced dairyman, devoted most of his energies to the examination of the food products with which he was most familiar, with results which, in that special line, were in all respects satisfactory and gratifying. My incumbency dates from four years ago; and, while seeking not to lose any of the advancement he had secured in the one branch, I immediately found opportunity for thorough and diligent labor in the numerous other departments and channels through which impure food products might be apprehended. Truly there was need for the investigation thus set on foot; for I was not long in discovering that in the prepared and manufactured products offered for sale as human food—this including spices and almost everything else that may be looked for upon the grocer's shelves—there was much and at times even dangerous adulterations. My inquiries and tests were conducted in a quiet but determined way, without either favor or fear. I promptly brought suit whenever absolutely certain that the public welfare demanded it, and have been invariably sustained by the authorities. After a time it became evident, even to those who were inclined to be obstinate, that the department was being operated and supported upon both moral and legal grounds, and that neither prominence, wealth nor influence would prevent punishment for violation of the law. With this happy consummation and the continued assurance that the department is both impartial and vigilant our former troubles have largely disappeared. Manufacturers and dealers are convinced that we mean business and instead of throwing obstacles in the way, as formerly, they now lend assistance and encouragement on every hand. In our mail we are continually finding letters in which the writers report that samples of products have been sent to us for test and analysis; requesting copies of our law and regulations; and stating that, inasmuch as they hope to do business in our state,

they wish to comply in every respect with the requirements that have been established and to be in harmony with the law and the department which sees to its enforcement. It has taken patience and prudence to bring about this welcome condition, but in Utah it has surely been attained. The result is in the nature of a guarantee and protection of the public health. The community has confidence that their victualling interests are being looked after and those who furnish the food products are also confident that in complying with the law their worthy wares are shielded from spurious competition.

Our youthful state is rich in the products of field, orchard and garden. In nutritive qualities and flavor they cannot be surpassed. Our streams twinkle with the choicest of the finny tribe and our cattle and sheep fatten upon a thousand hills. Where nature has done so much it would be a pity if man could not do something toward securing the utmost possible purity of our food supply. We think we are succeeding to the full measure of reasonable expectation in this great department of human economy, and in conclusion I can only suggest that, if there lingers in the mind of any of you a doubt as to our success, come out and eat and drink with us, and that lingering doubt will be swept away.

CHAIRMAN BAILEY: Our next speaker is Mrs. Mary Wright, the Dairy Commissioner of Colorado. Since Mrs. Wright has held the office of Commissioner of Colorado I am reliably informed the dairy interests of the state have increased in volume of business by over 33 1-3 per cent, both in production and also in number of cows, creameries and dairies. This speaks well for the only woman commissioner in the United States. Ladies and gentlemen, it gives me great pleasure to introduce to you Mrs. Mary L. Wright, Dairy Commissioner of Colorado.

#### ADDRESS OF MRS. MARY WRIGHT.

*Mr. President, Ladies and Gentlemen:*

When I went to Colorado twenty years ago I was told nobody could make cheese there, owing to the altitude and the effect it had in curing, also the various weeds which had to be contended with.

I thought this was a fallacy when I first heard it, and now I know it is. It has proved to be misleading. The farmers of Colorado have but little to fear from the weeds that are eaten by the cows in this state as having any disastrous effect on dairy products. Rather, they are to be congratulated on having alfalfa and sugar beets, both of which are excellent for feeding purposes, especially when we consider that alfalfa has the same value as food stuff as bran, while the cost is only about one-fifth as much.

Colorado is behind in her dairy interests. They

have been retarded considerably by lack of confidence on the part of the farmers and ranchmen. But for all that Colorado can to-day boast of the most modern and one of the largest creameries in America.

The increasing annually of the products of the dairies in Colorado and the certainty that it will in the near future reach a figure beyond that of the consumption of the state has made the problem of new markets one of great interest among those identified with the industry. When we remember that this industry in Colorado is yet in its infancy we realize we are advancing upon a promising and inviting future and that Colorado is the ideal state for the dairyman, with its home market, with its thousands of miners who are digging the yellow gold from our mountains, which go far toward making Colorado famous, and will require five times more dairy produce than is being produced at the present time, which fact is encouraging to those who are employed in the product of the dairy and other who are looking around for location.

A couple of years ago, while speaking to a gentleman from one of the famous dairy states of the east, I asked how dairying in said state compared with dairying in Colorado. He remarked: "Well, it takes a pretty good dairyman to make money in the east, owing principally to the high price of foodstuffs, while any dairyman can make a living here and a good one get rich."

Colorado is in need of a pure food law. Such a law has been made necessary by national and proposed national legislation and the enactment of pure food laws in most of the states. This and the few other states that have failed to enact adequate laws on pure foodstuffs to protect themselves are becoming more and more the dumping ground of the greater quantity of adulterated articles. Probably it is not making too broad a statement to say there is no question of such vital importance to the public as this one, for it affects the health of every man, woman and child.

Our secretary is in favor of short speeches, and I am glad of it; so shall let some one else have the platform.

CHAIRMAN BAILEY: I will now call upon Mr. Hortvet, who was to take the place of Mr. McConnell.

MR. HORTVET: In this paper on the subject of Maple Sugar and Syrup I want to take up your time somewhat with a discussion relating to the importance of the industry, the value of the industry, and I may have something to say as to the matter of adulteration and the possibilities affecting adulteration.

## ADDRESS OF JULIUS HORTVELT.

MAPLE SUGAR AND MAPLE SYRUP; THEIR  
ADULTERATION AND IMITATION.

The sugar maple is a tree of the genus *Acer* and of the species *Acer saccharum*; it is known also by the common name of "rock maple," and, on account of the solidity and hardness of its wood, as compared with that of other species of the genus, it is often called "hard maple." The tree is valued chiefly on account of its sap, whence come the products known as maple syrup and maple sugar. The hardness of the sugar maple, its rapid growth even in fair soil, its excellent habit, the beauty of its foliage, especially in autumn, and its comparative freedom from serious diseases and insect pests make it one of the most valuable ornamental trees of North America. It is planted in large numbers in our northern states for shade and for the embellishment of streets, roadsides and parks. The wood of this tree is more generally used than that of any other American maple; on account of its high fuel value it is prized as firewood; it is used in shipbuilding for keels, in the manufacture of wagon axles and sleigh runners, in the making of tools, shoe lasts, pegs, measuring scales and a multitude of other smaller articles; and in certain forms, especially those known as "bird's eye maple" and "curled maple," it is used for the interior finish of buildings, for flooring, and in the manufacture of furniture.

The sugar maple is limited almost wholly to that area of North America bounded by the 35th and 48th parallels and the 65th and 98th meridians. There are to-day practically no trees of the species south of 35 degrees latitude or west of 98 degrees longitude; North Carolina and Tennessee, Western Minnesota, Iowa and Missouri mark approximately the southern and the western limits. The northern area extends across the St. Lawrence and the Great Lakes and comprises the southern portions of Quebec and Ontario. Like the hickory, the white oak and other upland trees of eastern America, the sugar maple does not flourish in the Old World, and really fine specimens, if they exist at all, are very rare, though the tree was first introduced more than a century ago and considerable attention has been given to its cultivation.

Expressed in round numbers, of nearly 6,000,000 farms in the United States in 1900, 63,000 reported the production of maple sugar and syrup. Limited within the area above described, the proportion of farms reporting these products would, of course, be very much greater. The quantity of sugar made on farms in 1899 was approximately 11,900,000 pounds; the largest product reported by any census was 40,000,000 pounds, in 1860, and the smallest prior to 1900 was 28,400,000 pounds,

in 1870. The largest quantities of sugar made in 1899 were reported by Vermont, 4,800,000 pounds; New York, 3,600,000; and Pennsylvania, 1,400,000. These three states produced over 80 per cent of the total for the nation. The quantity of maple syrup reported by the census of 1900 was 2,000,000 gallons. The highest product reported by any census was 2,200,000 gallons, in 1890, and the smallest prior to 1900 was 900,000 gallons, in 1870. Of the states reporting maple syrup in 1900, Ohio leads with a production of 900,000 gallons, an amount much greater than ever reported before from that state. The product of New York was 400,000, Indiana 180,000, and Vermont 160,000 gallons. As to the relative production of sugar and syrup, an interesting contrast is shown between the results reported from the North Atlantic division and those reported from the North Central and Southern divisions. The maple sugar industry is conducted on a smaller scale in the North Central and Southern divisions than in the North Atlantic, and the farmers convert the larger quantity of their product into syrup, while in the North Atlantic division the main product is sugar. Computing a gallon of syrup as equivalent to 8 pounds of sugar, the total average annual maple sugar crop during the past forty years may be said to approximate 40,000,000 pounds. The census data show variations from somewhat below 30,000,000 pounds in 1899 to above 50,000,000 pounds in 1859. The money value of the 1899 crop, which was below the average, is placed by the census returns, in round numbers, at \$2,600,000. This is about 5 per cent of the value of the the total sugar crop, including products obtained from sugar cane, sugar beet and sorghum, as well as maple sugar and syrup, and about 0.1 per cent of the value of all farm crops reported in 1900.

Canadian figures cannot be given in detail, but it may be roughly estimated from meager information at hand that the average annual output of maple sugar and syrup in the provinces of Quebec and Ontario about equals the combined products of the states of Vermont and New York. The principal sugar area in Canada appears to be south of the St. Lawrence river and bordering the states of Maine, New Hampshire and Vermont.

We can recall that our maple sugar seasons during recent years have been seldom good; that there have been great variations and often discouraging reports. A Vermont firm which for some time has handled a large bulk of the sugar trade reports the following memoranda describing the seasons during the past dozen years: 1891, good; 1892, short; 1893, above average; 1894 and 1895, average; 1896, short; 1897, good; 1898, short; 1899, 1900 and 1901, poor; 1902, fair, but below average; 1903, poorest on record; 1904, good, but not above average. All available information points to the conclusion that the yield of maple sugar will probably decrease rather than increase in future years,

as maple forests are destroyed for purposes of clearing land and obtaining timber. Land covered with sugar orchards is still considered, however, the most productive part of many farms in some portions of the northern states. Much of our maple sugar is obtained from forests or natural groves left standing when the forests were cleared away, and some localities report sugar produced from orchards which have been replanted and developed by cultivation. The production of maple sugar and syrup is among the agricultural industries admitting of large development within the districts favored by nature with the conditions requisite for success. With proper care the maple grove will perpetuate itself through a long course of years; it will occupy broken grounds that could not otherwise be cultivated. The demand for pure, cleanly and carefully made maple sugar and syrup should increase from year to year, as the products become better known, and there is scarcely a possibility of overstocking the markets. It is proper at this time to call attention to the too general destruction of our maple forests, the lack of appreciation of their intrinsic value, not as timber, but as live productive trees, and to certain conditions of our time which tend to create in the popular mind a wrong conception as to what constitutes pure maple syrup and pure maple sugar. It is high time that the public interest be aroused and that effective steps be taken to correct these wrongs, so that the industry may become duly profitable to the producer and the consumer may learn the value of these products.

The sugar maple escaped the attention of the early botanists who examined the forests of North America, and it was unknown to the great Linnaeus, who, however, described the species known as *Acer saccharinum* and supposed it to be the true sugar maple. In his work on American trees, published in Germany in 1787, Wagenheim first described the sugar maple, although it is stated by an English botanist that the tree was introduced into England in 1735. There has been published a letter written by Benjamin Rush to Thomas Jefferson, in which the writer calls attention to this interesting tree and devotes some space to its description. Several references to the tree and its products may be found in the early colonial records. It may be said that the American Indian not only ceded his vast domains to the early settlers of this continent, in return for which he received "firewater" and gunpowder, but he also gave them the tobacco habit and the art of making maple sugar. The testimony of early travelers in North America shows that the nutritious and sugary properties of the maple sap were well known to the Indians before the earliest settlements by Europeans in New France and in New England, and that the making of maple sugar was an established industry of various tribes during the last half of the seventeenth century and

before the discovery of the upper Mississippi by the whites in 1673. Bossu, a French officer who traveled in America from 1756 to 1771, states that the French learned the method of sugar making from the Indians, and the testimony of other travelers points to the same conclusion. Maple sugar-making is, therefore, a pioneer industry, and it is said that the early settlers depended almost entirely on the maple for their domestic sugar supply.

Sugar-making begins with the upward flow of the crude sap at the coming of spring, usually some time in March or the beginning of April, and continues from two to four weeks. As the vernal equinox draws near, and the bright skies and the warm sun give assurance of the return of spring, the labors of the farmer begin in the sugar camp some weeks before he can be employed in the fields. In this industry, as in many others, the last fifty years have witnessed a great change. From primitive methods of tapping the tree and gathering and boiling the sap the producer of maple syrup and sugar has advanced to the application of modern scientific ideas. The ax has been superseded by the small augur or bit, patent iron spouts and specially made tin buckets have replaced the crude wooden spout and trough, and in place of the iron kettle we have the modern evaporator in its various forms. With the introduction of the evaporator has come the substantial frame building known as the sugar house or boiling house. The sap is now collected in large gathering tanks drawn by team, or in case the slope of the sugar bush is favorable, is gathered at a few central places and spouted down to the house in large pipes. Here it is stored in large tanks, from which it can conveniently be conducted to the evaporator. The appliances for syrup and sugar-making are said to be now so perfected that no necessity exists for such crude practices as using milk, eggs, etc., for clarifying. It is without the province of this paper to describe in detail the principle of the evaporator and the operations of controlling the sap during the process of reduction to syrup or sugar. What has been given has been merely for the purpose of indicating the stage to which the operations of the sugar bush have advanced during the latter part of the past century.

The chief aim of this paper is the treatment of the finished products known as maple syrup and maple sugar. But it may be of interest at this point to refer to a certain phase of the maple sugar industry, which in the modern arrangements of trade has assumed large proportions. By way of illustration may be mentioned an area of land of about 250 square miles, bounded on the east by Lake Michigan and on the west by the Illinois prairie and intersected by a canal. For the surprising variety, originality and scope of its productions this small area is unsurpassed. Here,

as in other densely populated centers, the sugar maple is not known to flourish, except as planted for shade or for ornamental purposes, yet an accumulation of various facts leads strongly to the conclusion that in Chicago has been "produced" annually in recent years a quantity of maple sugar and syrup equaling the combined products of the states of Vermont, New York and Pennsylvania. "New Vermont maple sugar" has appeared abundantly in the markets every year, very early in the season, long before sugar weather is established or the sap starts in the maple groves of northern New England. But there are other centers of commerce which rank fairly high in this class of traffic, and possibly there are parties to the conspiracy who may be traced back even as far as to the time-honored bush. It is probably not surprising that a certain eastern jobber has in recent years seldom failed to fill orders for maple sugar, at any time of the year, within what is regarded in trade as "reasonable time"; he has seldom failed to report a "supply on hand" in cars "standing ready on the track." It is to be regretted that the census does not give statistics as to the approximate number of maple trees per unit area in the various regions covered, also estimates as to the average yield per tree in pounds of sugar. One is naturally impelled to inquire why, in the midst of the frequent low waves of production in recent years, certain tracts have persisted at the crest. Are there trees in some counties which by an unusual combination of circumstances are able year after year to show yields double or triple those which can be recorded to the credit of equally good trees in other counties? All realize the danger that lies in suspiciousness or pessimism, but there is an equal danger in placed optimism; and, in the face of well-known facts, what better trait than the disposition to sift to the bottom of things?

It has long been a matter of common report that there are sold on the markets large quantities of alleged maple syrups which are fabrications composed only in part of maple syrup, or, as has often been the case, are entirely free from any maple product whatever. The requisite maple flavor has been imparted to such syrups, it is said, by mixing them with an extract prepared from hickory bark and sold extensively under the name of "mapleine." As claimed by its inventor, "the effect of the extract or decoction is to give the syrup the flavor of the maple, producing a syrup which cannot be distinguished from genuine maple syrup." The simple practice of flavoring syrups with corn cob infusions has, so far as known, probably not extended seriously beyond the bounds of rural communities or the domestic kitchen. There has recently been reported a process of preparing imitation maple syrup which consists in distilling maple or hickory chips with steam, adding sugar to the distillate, boiling down to the

required density, then adding caramel if necessary. Various other processes, concoctions, flavors and essences have presented themselves from time to time, but these in many instances have been of such a character as not to merit serious attention. The use of so-called corn syrup, or starch glucose, as an adulterant of maple syrup has been practiced quite extensively for many years, but this form of adulteration, while very profitable to the manufacturer, has yielded an inferior article and one which could easily be detected by the chemist if not by the consumer.

By a rough classification, accountable by the fact that sucrose constitutes their chief ingredient, so-called maple syrup and maple sugar have long been classed with products obtained from sugar cane, sugar beet and sorghum. The statement that the sugar of the maple sap is identical in composition with that of the sugar cane has been currently accepted, hence it has been concluded that chemical methods are helpless as a means of distinguishing the syrup or sugar prepared from the sugar maple from like products prepared from the sugar cane. Commercial interests have taken advantage of the unsatisfactory state of chemical knowledge regarding maple products, and have been active in enforcing upon the popular mind the belief that pure maple sugar is chemically identical with the well-known refined granulated sugar. Contrary to absurd opinions and interested claims, however, it can be shown that, beyond the point of identity merely as regards their sucrose content, so-called cane sugar and maple sugar are very divergent in composition and properties.

Maple sap is essentially a dilute solution of sucrose, carrying, also, small amounts of proteids, organic acids (mainly malic), mineral matter (chiefly lime and potash), and traces of reducing sugars. During the boiling-down process some of the proteids are coagulated and rise to the surface, where they are removed by skimming, while a considerable amount of the mineral matter (so-called "nitre", or simple dirt), is deposited at the bottom of the evaporator. The syrup, after being drawn, may be further clarified by filtering hot through felt strainers or by sedimentation. A product intended for use as syrup is commonly boiled down to a density of eleven pounds to the gallon; if it is to be made into sugar, the syrup is boiled to a concentration such that it will harden on cooling. As is well known, the value of maple sugar is out of proportion to the saccharine matter which it contains and is due to the peculiar, pleasant flavor derived from certain minor ingredients carried in the sap. The nature of these flavoring substances has not been definitely determined, but that they are not wholly volatile is shown by the fact that they remain in the syrup during the process of concentration and may be retained in the sugar for a consider-

able time. The distinctly agreeable odor that accompanies the evaporation of maple sap is familiar to any one who has visited an orchard during the sugar season. The wide range in color, from very light to very dark, characteristic of maple syrups and sugars is attributable to various causes, chief among which are location and character of soil, time of season, and care taken in handling and boiling the sap. The first run of sap, as is well known, produces a much lighter colored syrup and sugar than the later runs, which not only yield darker products, but impart flavors sometimes unpleasant to the taste. Color is, however, not a safe criterion as to quality or purity, and has not a great influence upon prices commanded in the market, as it has long been suspected that very little of the pure article eventually reaches the consumer.

Within the past fifteen years more or less complete analyses of maple products have been made and reported, notably by analysts of the United States Department of Agriculture, the Canada Inland Revenue Department, the Connecticut Agricultural Experiment Station, and the Illinois State Food Commission. These analyses, with the exception of those reported from Canada, show little or no attempt to arrive at the properties of samples of known purity, and beyond the point of reporting adulteration with starch glucose all analysts are cautious and seem to be of the opinion that it is impossible to say in regard to most samples whether they are spurious or genuine. The analysis of commercial maple syrups has, therefore, in recent years been confined chiefly to the detection of starch glucose. Of the small number of syrups examined in the laboratory of the Minnesota Dairy and Food Department during 1902, about 10 per cent were found to be glucose mixtures, but during the progress of the work in the year following it soon became apparent that a very large number of the alleged maple syrups not classed among the glucose mixtures were in all probability maple syrups more or less diluted with common cane syrup. A complete chemical analysis of a large number of samples of known purity alongside with the analysis of a corresponding number of commercial products seemed to be the necessary course in order to differentiate more closely the true from the false. To obtain samples of known purity fairly representing the principal sugar maple regions of the United States has required considerable time and effort, and the work of analyzing these samples has doubtless been as thorough in extent and detail as any heretofore undertaken in a food commission's laboratory. As a result of nearly two years of patient labor it has been clearly shown that the known pure maple sugars and syrups were radically different in chemical composition and properties from the majority of alleged maple products which were found in the markets. A pure maple sugar or

syrup made and clarified by methods now employed in the sugar orchards is a product as distinct in composition as pure milk or butter or pure apple cider. Like these latter products, the composition varies, but the essential constituents range within certain limits. In this connection it is well to call attention to the too common misunderstanding or misuse of the word "pure." No well-informed person will say that a pure cider vinegar is simply a weak aqueous solution of acetic acid, that whisky is nothing but a mixture of alcohol and water, or that pure extract of vanilla is only a solution of vanillin in weak alcohol. On the contrary, the word "pure" in each instance comprehends the whole product made by a well understood process and implies the existence of various minor ingredients to which such product owes its distinctive properties. As to the various sugars, we have cane sugar, crude as well as refined; beet sugar and maple sugar. By pure cane sugar is understood the refined product obtained from the sugar cane, and because the refined sugar obtained from the sugar beet is identical in composition with refined cane sugar the two by common usage are called cane sugar, without any attempt to specify the origin of the product. In the case of pure maple sugar, the word "pure" is meant to include the *whole* product obtained by boiling down the maple sap and by the well-known operations of straining and clarifying now employed in the sugar bush. With the making of maple sugar or syrup the refiner should have nothing to do. These products should come packed and sealed direct from the farmers who make them, and in that condition should be distributed by the jobbers to the retailers, so that the consumer may get them unchanged and absolutely pure. The now extensive practice of shipping maple sugar in pails or tubs by the car loads to the commercial centers, where they are to be made over into sugar or syrup, is pernicious in the extreme. Let these products be handled as we now handle creamery butter and the industry will be greatly improved within ten years. Those who have seen the unclarified, dirty looking and rank flavored so-called pure maple sugar put up in tubs for the wholesaler will not fail to realize the need of a radical reform. When this stuff has been reboiled and clarified, even without adulteration with cane sugar, it has little or none of the superior properties of the properly made article. The farmer should be urged and encouraged to make more syrup and less sugar; the careless, haphazard wholesale making of sugar, as now carried on especially in Vermont and Canada, for the immediate purpose of supplying the shippers, should be stamped out. Only by this means and by much needed encouragement will the industry be revived where it is now threatened with decay, the trade will be better and more wholesome where it is now often de-

moralized, and the consumer will learn to know and to value, as he seldom does now, a genuine maple syrup.

Contrary to the doctrines of certain jobbers and so-called refiners, cane sugar and pure maple sugar are unlike in composition, and such a thing as a maple syrup composed simply of water and cane sugar is an absurdity. If the normal constituents of a maple product be eliminated, the result constitutes a fraud. The process of "toning up" or "toning down" (or whatever a certain class of producers consider it convenient to call it) by the admixture with cane syrup has for some time past been the form of adulteration most universally practiced, and the result has been that a very large proportion of the well-known commercial brands represented and sold as pure have contained very little or none whatever of the genuine article. The results of analyses made in the laboratory of the Minnesota Dairy and Food Department during a three months' period of 1903 may be stated as follows:

|                                      |             |
|--------------------------------------|-------------|
| Number of samples adulterated.....   | 85 per cent |
| Samples not containing maple sugar.. | 25 per cent |
| Commercial brands not genuine.....   | 88 per cent |

These results are taken from the worst period during the past two years; a year later the results were very much better, the percentage of adulteration having fallen to about 60. A number of samples have been found to contain salicylic acid, many contained artificial flavoring and coloring, and in a few cases the manufacturer apparently felt secure in sending out as "pure maple syrup" a product compounded of cane sugar and water and a little caramel. The manufacturers have practiced forms of deception which to the intelligent observer are as transparent as their products are thin, and when called to account have offered the most vaporous of excuses. The assertion that the supply of pure maple sugar "does not begin to meet the demand" is a poor justification. If it is necessary that the markets be supplied with a considerable quantity of spurious products in order to foster the trade, then let there be an open frankness in the methods of advertising and labeling and a plain honesty in the fixing of prices. Prices based on the market values of common granulated sugar would be more equitable than many which have prevailed, and a label like the following would fairly represent the composition of the alleged maple syrups which have been sold throughout the land: "This syrup is composed of the following ingredients and none other: Cane syrup blended with sufficient maple syrup or other coloring and flavoring in order to maintain a uniform quality of product."

CHAIRMAN BAILEY: I will now call on Prof. M. A. Scovell.

#### ADDRESS OF PROF. SCOVELL.

I think the subject is on the enforcement of law by the different commissioners. I have not prepared any paper, as I think one paper is enough for each person in this convention, for we should not occupy too much time. I will occupy therefore, only a few minutes. In the enforcement of law the commissioner should be careful, and he should do it by co-operation with the seller and manufacturer and jobber if possible. When our law first went into effect we had circulars issued, giving a copy of the law, and when certain standards are made we send a circular to all grocers in the state as we get them from Bradstreet's or Dun's and to all those interested. We take a great deal of pains, and it costs us considerable money to give them the information, which of course we are not compelled to do. Then Mr. Allen organized the grocers in the state by going to Louisville, Paducah and other large places and calling meetings of the grocers and explaining the law and having them organize and showing them the necessity for pure food. Then the first samples we took, without the purview of the law, that is, we did not take them under the law, but to let the grocers know what they were and what they were dealing in, and then let them know that such goods were adulterated and that they must label them "adulterated," or that they must be properly labeled. The result was that we soon got the manufacturers coming to us instead of our going to the manufacturers. The office of the food division is a sort of manufacturers' meeting, and has been for some time, manufacturers coming and consulting us about labels and how they should be made. I am happy to state that the law in Kentucky is well enforced in the main, and it has been done by this method, rather than by prosecution without first informing them. The grocers of the state now are beginning to get acquainted with the law, and by this means we have the co-operation of our own people and in the main the co-operation of the manufacturers, and as to the poorer class of manufacturers, we don't want their co-operation. We want them out of the state and so tell them, and instead of having their labels on the bottles and so forth as formerly, they are labeled as we suggest, and I think that is the best way to enforce the law.

PRESIDENT BAILEY: The next on the program is Hon. Alfred H. Jones of Illinois, whom we all look up to as the leader in the pure food work.

#### ADDRESS OF HON. A. H. JONES.

Mr. Chairman—I want to assure you that when I was notified by you that I had been assigned to deliver a few remarks in regard to the work of enforcing the State Food Laws of Illinois, as well as to say something in regard to the work accom-

plished by the Illinois State Food Department on this occasion, it was with pleasure that I accepted the invitation. Having no address prepared, I will say what I have to say in an impromptu way.

The consumers—men, women and children—of Illinois never have effected an organization, offensive and defensive, but have quietly and practically submitted to whatever the vendors in the various food products might put upon the market until our legislature, in its wisdom, came to their rescue and established the Illinois State Food Commission in 1899.

On the first day of January, 1900, the department known as the State Food Department was fully organized with the main office in the Manhattan Building in Chicago. While the work of furnishing the office and equipping the laboratory was being completed, the task of compiling the laws and making suitable rulings thereon, also giving a synopsis of all laws with the rulings adopted by the Commission, was performed.

As provided by law, after the organization of the department, the first work of the department was to take samples of the various food products by our inspectors for the purpose of analysis, also to see that some were properly labeled and prepared in conformity with our State Food Laws.

There are about fifteen thousand retail grocery stores, restaurants and booths where food products are sold. The importance of this work cannot be overestimated when we take into consideration the fact that over one hundred thousand dollars were annually paid out for foods in the State of Illinois prior to the creation of the State Food Department that were not labeled so that the consumer might know that his food was not adulterated. But this is not the most important question involved. The danger to life and health from the consumption of such a vast amount of adulterated foods, a large proportion of which is known to be unwholesome and injurious to the health, is the vital question and one in which we are mainly interested and calls for immediate action.

Over five years' experience has thoroughly convinced me that the most effective manner of combating the evil of adulteration in foods and drinks, is by having the laws made thoroughly comprehensive, covering the manufacture of articles of food and drink and the placing of them upon the market. These laws should compel the manufacturer, packer or jobber to label, stamp or brand the true name or character of every article of food, the quality and quantity of every package and the just and true representation of the merits and qualities of every article on the same, placing adequate penalties for every violation and holding every individual, firm or corporation responsible for the character and quality of food manufactured and sold or offered for sale.

Until comparatively recently, governments have

been content to measure food by the quart, the pound or the piece. The time has now come when foods need to be measured by their composition as to strength, purity and effect upon the health.

It is difficult to obtain reliable statistics as to the percentage of food sold in violation of law on the morals and health of the people of our State, but we do know positively that brand after brand has been exposed and driven from the markets through the enforcement of our State Food Laws. Unfortunately fresh deceptions are devised to take their places, requiring the utmost diligence on the part of the department to protect the people.

The question has been propounded, "how long will it be necessary to maintain a department of State Food Laws?" The logical answer is, just as long as human depravity, selfishness and love of gain exists.

Illinois is the first state in the union in agriculture and the products of the dairy. She stands in the galaxy of states in the production of food products. Illinois already has over one million cows and with her 700 creameries and 10,000 dairies, we see how necessary it is that these industries should be safely guarded, and this has been largely brought about by organization and co-operation among the different sections of our state.

Manufacturers and dealers cannot be made honest by law, but law can make dishonesty pay the penalty when it steals the livery of honest products to serve a dishonest purpose. In every civilized land, fierce competition and unbridled greed have undertaken to profit by the adulteration of or falsely labeling nearly every article of food used by the human family. The close partnership which has existed for so many years between coffee and chicory does a thriving business in many states under the firm name and style of coffee. Spices enriched with pepper hulls and ground cocoanut shells are manufactured and sold by the ton. Baking powders under misleading names crowd the markets. Canned fruit is preserved with antiseptics which delay the digestive processes. Jellies colored with imitation of natural fruits sold as fruit jellies, flood the market although they are destitute of fruit juice. Lemon extracts are made without lemon oil and vanilla extracts without vanilla. The hog's lard of the north competes with the cheap cotton seed oil of the south, and mix in the same tub under the banner of lard. Oysters are partially embalmed with chemicals. Borax and formaldehyde go into milk to kill babies and weaken invalids. Milk is robbed of its cream, filled with lard and sent all over the world to ruin the reputation of our American cheese. A good portion of strained honey of commerce never produced any strain on the bees. Cider vinegar is distilled from grain and not from the juice of the apple. Vermont and Canadian maple syrup never saw Vermont or Canada and is made from the sap of the corn that

grows in the great American corn belt. Wheat flour is adulterated with corn flour. Cheapness is secured by these adulterations and false labeling and the people are defrauded.

The adulteration of the various food products is a serious matter. It concerns the public health. It touches the public pocket.

Pure Food Laws are designed for the protection of both. These laws are primarily for the benefit of all and are not class legislation, as is contended by these adulterators of the people's food.

Every American State and Territory within the confines of the United States has Pure Food Laws, except the Indian Territory. Their necessity has been fully recognized by every European government. Beyond question they are oppressive to those manufacturers and dealers who try to get something for nothing and also to those whose love of the dollar is greater than their regard for the public health. It is not fiction that unhealthy adulterants are used in many of the various food products. It may be true that healthy people can stand considerable poison and survive the consumption of indigestible food, but those of tender years and tender stomachs, such as the babies and invalids, cannot; and should be protected by stringent laws and their enforcement.

There is hardly a day but what there is some new breakfast food launched on the markets of our state and it keeps our inspectors busy looking after these new preparations. But I think it is not only fair, but fit and proper, to say that substantially eighty per cent of our food products are wholesome. When we take into consideration the vast amount of food products consumed each year by the five millions of people of Illinois, we can give some idea of the immensity of this question. And we must remember that it is necessary to have varieties of food. The rich man can have his high priced foods; he can have all the luxuries which the food markets afford—but the poor man must have his foods pure and wholesome also, and the poor man, the man of small means who has a family to support and must use economy in his expenditures, while he may not be able to have his maple or cane syrup, his victuals seasoned with pure olive oil nor his coffee unmixed with chicory, fresh dairy butter and so on down the entire "bill of fare," yet he can have his glucose or corn syrup, pure, his "salad oil" made from cotton seed oil, his coffee blended with chicory and live just as long and have as nourishing diet as the rich man can have with his high priced foods, for in my opinion (and I think that is the opinion also of all those who have given the question of these food products thought and study—) the way the glucose or corn syrup is prepared for the food markets, it is just as healthful and wholesome as either maple or cane and it is an Illinois product; its use as a food product ought to have the sanction of the people of Illinois.

The benefits, as well as good results, arising from the enforcement of these laws can be seen in the sale of almost every food product on the market of our State. The manufacturers, packers, jobbers, and dealers generally, are taking more interest in the law, as shown by the inquiries and investigations concerning food standards, and the proper labeling, stamping or branding the various food products, and of the law compelling all imitation food products, artificially preserved and adulterated, to be so labeled and sold that the merit may be fully understood which is bringing a better class of goods to our markets.

The work of the Food Department has covered nearly the entire food product and many questions growing out of the manufacture and sale of the food products have been settled. The better class of the manufacturers, packers and dealers recognize the justice of these laws and seem anxious to observe them. We have received great assistance from the public press of the State as well as food magazines and food journals. The help received from this source is of incalculable value and has done much to assist in purifying the food markets of our State and drive out adulterated food products, and I take this opportunity to especially thank the press for its assistance and appreciation of the work done by the Department.

PRESIDENT BAILEY: Our next paper will be from Mr. John A. Bliss of Alameda County, California, Chairman and Treasurer of the State Dairy Bureau of California. Gentlemen of the convention, it gives me great pleasure to introduce Mr. Bliss, as it shows the entire Pacific Coast to be represented here to-day.

#### ADDRESS OF JOHN A. BLISS.

#### THE PURE FOOD PROBLEM IN CALIFORNIA.

The pure food problem in California is conspicuous only in the fact that it is one of the few important states of our Union that has not yet taken up the enforcement of general pure food laws, notwithstanding that she produces and is seeking markets for the greatest variety of food products of any state. At each successive session of the legislature efforts to secure state regulation in regard to food products have failed to crystallize into law, as the saying is, regardless of the unanimity of sentiment in its favor. But we are not without hope, for even if our state should continue to fail to act, there is much to expect as a result of the attitude of the federal government on this momentous question, namely, the adulteration and sophistication of the food consumed by the people. Californians have appreciated this possibility on the part of the federal law-makers and I am pleased to say that had the various pure food bills before the last session of Congress come to a final consideration they would have found the California congressional delegation, with pos-

sibly one exception, a unit in favor of federal food regulation.

Representing, as I do, the dairy interests both in private and officially, I am pleased to report that California has nailed the greatest of food frauds, that of oleomargarine. For almost ten years this counterfeit for butter has been entirely kept out of the markets of the state as a result of her dairy law, which is similar to that of other protected states in that it is based on the color feature.

The other great temptation in the way of adulteration, that of milk, has thus far been under the control of municipalities, if at all under control, in most cases with success, but too often the efforts at suppression are spasmodic or they take the form of unwarranted aggressiveness against the dairymen, which shows the need for a uniform, conservative, but thorough system of inspection and control in the hands of persons conversant with the production and marketing of milk, a qualification too often lacking in the city inspector under the present regime.

Probably our greatest problem, barring milk and butter adulteration, is with our wines of which California is the greatest producing state, not alone in quantity, but in quality as well. Through the sophistication of her wines, both within the state and after they leave it, California sustains an enormous financial loss. Consequently the state has manifested the greatest interest in the bill introduced in congress by the Hon. Theodore Bell of the second congressional district, by means of which it has been proposed to treat the adulteration of wines along the same successful lines as has been done in case of oleomargarine, that is, by means of an internal revenue tax on the adulterated article equal to the advantage gained by the degree of adulteration. Before this convention adjourns I sincerely hope it will go on record as being in favor of this important measure, which will again be presented to congress, and that this association will lend its efforts in securing its enactment into law.

The raw material out of which our jellies, preserves, catsup, canned goods, etc., are made are cheap beyond comparison, and yet cheaper ingredients displace them in almost every form of disguise. Our bees have a long season in which to work and a prodigious wealth of flowers from which to gather their harvest of honey, but our beekeepers have despaired in their unequal competition with glucose factories.

But it is not alone the adulteration and sophistication practiced by our own citizens that has caused a general protest from consumers. California has in addition to suffer from what comes over her state line and to look out for the opposition at home from those interests opposed to pure food legislation, as well as from those in other states already protected, but whose citizens send us

goods they may not use in their own states, which has been too much for us and the battle for all-around pure food for the state has yet to be won.

CHAIRMAN BAILEY: We will now hear from Boston, and I will introduce to you Mr. P. M. Harwood, General Agent of the Dairy Bureau, Massachusetts.

MR. HARWOOD: I wish I hadn't any paper at this late hour, but I assure you that the one I have is short. It gives me pleasure to make my initial bow before this association, especially as I have heard so many times from you through my predecessor, Mr. Whittaker, with whom you are all very well acquainted and who had charge of the department which I now represent for something like twelve years. It is with some degree of diffidence that I come before you who appear to be veterans and who appear to have this subject so well in hand, but in what I shall say I shall need to make just that preliminary statement. In the first place, as another commissioner has said here, I am not a lawyer, but a part of my work, which is that of enforcing the laws of the Dairy Bureau, requires that I prosecute cases in the lower courts; we haven't the money, like Pennsylvania and Ohio, to hire a special attorney to do that work, and another thing is, the work which I have to do is confined wholly to dairy products. In our state we have another board, the State Board of Health, represented here by Mr. Leach, which does all the prosecuting of frauds outside of dairy products, and our law is such that it requires three-fifths of the appropriation to be expended in the prosecution of violators of the dairy law, and this is largely expended along the line of prosecuting violators of the milk law. The work of the Dairy Bureau has been more along the line of prosecutions under the dairy laws. Although we may look very small through this end of the telescope, nevertheless we are pioneers, I believe, in this matter of food legislation, and we have on the whole about as good laws as any state, but still they are not as good as they might be.

ADDRESS OF P. M. HARWOOD,

General Agent Massachusetts Dairy Bureau.

THE ENFORCEMENT OF LAW.

The man to whom is entrusted "the enforcement of law" has an important and responsible duty to perform. If laws were ideal, right and perfect the work would be greatly simplified. But we have to take laws as they are, with all their imperfections, and their sometimes inconsistencies. I know it is true in Massachusetts and I suppose that it is no less true in other states that laws are passed sometimes without proper consideration and not infrequently as a result of compromise. It

seems a great pity that these laws are not made or at least drawn by competent experts and thus perfected before passage. The average legislator can hardly be expected to know the finesses of law. Possibly lawyers do not object to more or less loopholes, for such things give them business.

But the laws, such as they are, are before us and it is our duty to enforce them.

#### EVIDENCE.

The plan adopted by the department which I represent is to do this work in the most thorough and conscientious manner possible. By so doing our cases are well nigh won at the outset generally resulting in convictions. Out of the 376 violations of law which I have personally prosecuted in the last twenty months, but three have failed of final conviction. In one of these cases the violator disappeared and the other two were lost because the attorney for the defense angered and thus confused to some extent our witness. The entire work is directed by the general agent, who enters and prosecutes all the cases in the lower courts. An agent under him is in the continuous employ of the bureau and does the inspecting and acts as a sort of field marshal directing the work of the temporary sub-agents, sometimes men and sometimes women, in their purchase of samples, etc. Positive instructions are given to all these to do absolutely nothing to induce anyone to violate law. Their duty and their attitude is to simply act as ordinary customers, giving to the seller the entire option as to whether he violates or obeys the law in making the sale. It is our province, first, to ascertain whether or not the law is being violated, then to place the responsibility of intent if possible, afterwards prosecuting the offender. It has been our habit therefore in each case to make more than one purchase, sometimes many, in any event enough to convince us that the violation is the habit and not an inadvertence on the part of the offender.

In another method of procuring evidence, that is by the taking of samples instead of purchasing them, great care is also exercised. In Massachusetts we are obliged in the taking of milk samples to give sealed duplicate samples to the seller under certain conditions, also to send the result of analysis within ten days after obtaining the same. If the milk peddler produces the whole or any part of the milk in his possession we are obliged to give him a sample whether he asks for it or not. If no part of the milk was produced by the peddler a sealed duplicate sample is only given when requested by the peddler. In case of purchase of milk as any regular customer would purchase, and in all oleomargarine and renovated butter cases no duplicate samples whether purchased or taken, are given, neither is any notice of result of analysis in either oleomargarine or renovated butter cases required by law. In the case of milk

this notice of analysis within ten days is little short of a nuisance. It appears all right and just on the surface, but from the standpoint of the law enforcer it is sometimes in the way. To properly work up a case frequently takes more than ten days, and in the process of working it is not wise or desirable oftentimes to show one's hand until after the end is accomplished.

So far as possible prosecutions are brought against the owner or the actual manager of the business. In all cases, however, this is not possible, for some courts rule, whether rightly or wrongly, that the principal is not responsible for the acts of his agent under some conditions, even though made so by special statute, and in such courts we put in the men (clerks, etc.) who actually made the sales. This, however, does not apply to possession with intent to sell, but to such statutes as require actual sales, as our renovated butter statute and the statute against fraudulent sale of oleomargarine.

The agent who makes the purchase or takes a sample, makes out a memorandum card, which he attaches to the sample, and in this form delivers it to the chemist for analysis. The card is afterwards used at the trial for the purpose of refreshing the memory of the witness. The trial, so far as the prosecution is concerned, is brief, the chain of evidence connecting the sample with the defendant being perfectly forged.

Since the organization of the bureau 1,612 cases have been prosecuted in the courts. Of these 1,032 were for the violation of the oleomargarine laws, 399 for violation of the renovated butter law, and 181 for violation of the milk laws. In the early days almost all the cases were the result of the laws restricting the sale of oleomargarine. Prior to January, 1903, most of the prosecutions for violation of the oleomargarine laws were brought under the anti-color statute so-called. Evidence in these cases was obtained largely by taking samples from peddlers and stores, though sometimes by purchase, butter being asked for. But since that date almost all the cases have been obtained by actual purchase, and in case of colored goods have been brought under the anti-color law, and in the case of uncolored goods under the special law relating to the sale of oleomargarine when butter is called for.

#### COMPLAINTS.

Our Massachusetts anti-color law, so-called, is a good statute, and the best one under which to bring complaints with which I have anything to do. The form of complaint is as follows:

"did sell to .....  
did have in his possession with intent to sell did expose for sale a certain quantity, to-wit, one pound of a certain product commonly called oleomargarine made partly out of an oleaginous substance not produced from unadulterated milk or

cream from the same, and that said product, so exposed in his possession as aforesaid, was then and there in imitation of yellow butter produced from pure unadulterated milk or cream of the same."

It is one of the best statutes to procure convictions under that I know of. Prior to the enactment of the national law of 1902 taxing colored oleomargarine 10 cents per pound the Massachusetts anti-color statute was practically impregnable. But strange as it may seem the passage of that law brought about a condition which showed a possible weakness in our statute which was not before suspected. I use the word possible because the matter has never been carried to the Supreme Court of the state for a decision. The weakness, if any, exists in the possibility of having read into the law what is not already there, viz., the word "extraneous," which renders it necessary for us now, in order to prove an imitation of yellow butter, also to prove the *presence* of "extraneous" coloration or ingredient. The right of appeal in Massachusetts lies wholly with the defense. This is oftentimes unfortunate, as there frequently arise questions upon which the government would like an opinion of the Supreme Court.

#### PROSECUTIONS.

In the past one of our great troubles in Massachusetts has been that in cases where an appeal has been taken, after conviction in the lower court, the habit of filing the cases on payment of from \$25 to \$75 expenses, instead of insisting on a fine of not less than \$100, in the Superior Court, by recommendation of the district attorney, has had a pernicious effect. The reasons for district attorneys doing this are, first, that the docket is usually crowded with several murder or other important cases to be tried and filing is along the lines of easiest resistance; secondly, the minimum fine of \$100 for first offense appears large when compared with the minimum fines for what are usually considered far more serious offenses, and thirdly, many lawyers and some judges are, and always have been, inclined to look with disfavor upon the oleomargarine anti-color law. Then, too, unfortunately, in Massachusetts many of our state institutions use oleomargarine instead of butter on account of its cheapness, thus making an unfortunate inconsistency. But since our policy has so largely changed in relation to the actual fraud in the evidence, butter being now almost always called for, a most decided change has been wrought and courts where the practice referred to has heretofore prevailed now with few exceptions impose the fine. I may say that when butter is asked for and oleomargarine given the sympathy of all courts and the legal fraternity in general is with us.

In the prosecution of these cases in the lower courts throughout the state before judges of diver-

sified personality, in widely different surroundings, it is of great advantage to the prosecuting officer to know the judge and his peculiarities. For example, one judge will find a principal guilty every time, while another finds and orders that the one (clerk or otherwise) who actually made the sale is the only responsible party and that he be brought into court. One judge will impose the minimum fine on all first offenses, while another will file all cases of first offense for violation of whatsoever food law, at the same time warning the defendant that if he is ever brought into court again for the violation of this same law the case will be taken up and the fine imposed. Bearing upon the Superior Court rulings before referred to in this paper in reference to extraneous coloration being necessary, one of the very best judges before whom I try cases rules as follows: "The statute says nothing about extraneous coloration or ingredient and I shall rule according to the wording of the statute, at least until the Supreme Court decides otherwise." Other district and police court judges feel and rule in accordance with the Superior Court opinion. One judge thinks that there ought to be at least two government witnesses. In this, so far as I know, he stands alone in our state. This same judge thinks all cases should be brought into court within twenty-four hours. In that he also stands alone, and I am sure he expects the impossible. There is another judge who roundly abuses the state officers and scores the law every time a complaint is sworn out. I have had many cases before this judge and have won them all. Some judges hold strongly to the time honored dignity of the court, others have the air of carelessness and go as you please. In short, there are no two judges alike, each differing with another in personality, in opinions of the law, in methods, etc.

#### PENALTIES.

Justice and reason should prevail in the imposing of penalties. To my mind these are most important. Generally speaking we have no difficulty in Massachusetts so long as our demands are reasonable. In all my experience, with but a single exception, I have never known a judge to impose a heavier penalty than I asked for. Some judges believe that where two complaints are brought at the same time for offenses committed on different dates that they should both be considered as first offenses, others consider them in the light of first and second offenses, and each judge finds in accordance with the opinion thus held. I recall one instance where two complaints were made against a man for violation of the renovated laws. He was found guilty in both, fined \$25 on one and the other filed, or in other words found guilty and continued for sentence. Later he was found violating the law and was complained of again. Our statute fixes the penalty

for a second offense at not less than \$100. The man was opposed to paying \$100 and would fight that proposition, but was willing that the other first offense case be brought up and a fine of \$25 imposed, and promised to quit violating the law, which was done. He has since conformed to the law. The last case is filed and that will be brought up if he violates the law again and a fine imposed. This could only happen where the court held the above mentioned opinion. Other judges hold that the second offense, although brought into court simultaneously with the first calls for a second offense fine. This, however, is rarely imposed, but instead the case is continued for sentence. Many of our laws have too heavy penalties and thus to a degree defeat their own ends.

These citations of some of the difficulties with which we have to contend go to show that law unlike mathematics is far from being an exact science, and calls for great patience as well as persistence on our part in our work as prosecuting officers.

#### CONCLUSION.

In closing I will say that in my opinion in the enforcement of law the Golden Rule in its broadest sense is as applicable as in any other sphere of action. If a man violates law he can expect nothing but a just punishment. If he is innocent he should expect and get an acquittal. His punishment should fit the offense, no more and no less. It is human nature with some men to go as near the line as the law and its enforcing authorities will permit. If the opinion prevails that a law is a dead letter it is sure to be violated to a large extent. The moment, however, the public understands that the laws are to be vigorously, justly and honestly enforced, those laws are respected and the people are in a reasonable degree protected from fraud.

I venture the following suggestions: More common sense and care should be used in the passage of laws.

Laws to be right must be passed in the temper of justice and not for selfish interest.

Any law that cannot be and ought not to be enforced should be repealed.

The enforcement of even the very best laws calls for the exercise of wise discretion on the part of the prosecuting official.

The prosecutor should also be possessed of a large normal conscience, one that will approve or disapprove his course to a nicety in proportion as he conforms to or deviates from exact right and justice in his demands. I know of no better guide to follow, no surer one to success.

CHAIRMAN BAILEY: We have one more address here, which we have reserved up to the last; we will leave you to judge why. The Commissioner from Idaho, Mr. McPherson, will wind up the discussions for the afternoon.

#### ADDRESS OF MR. M'PHERSON.

Mr. Chairman and Gentlemen:

I have been wondering ever since I came to this convention why it was they put me on at the tail end, and I couldn't think of any other reason than that they must liken me to a whale, because its only weapon of defense is its tail. I was notified that I would be requested to make a short address here and I did not write a paper because I could see by the program that if there was anything I could think of to say it would be all thrashed over before my turn came.

Before I go any farther, and while I think of it, I have a resolution here that was written up by Mr. Duckwall with regard to the tin used in tin cans for canning purposes, and the reason why I was requested to offer this resolution by Mr. Duckwall was so that the association might go on record on this, and that a copy of this be sent to Senator Heyburn of Idaho, chairman of the pure food committee in the United States Senate, and I will ask that this be read after I get through speaking.

I notice what the commissioners have said here, that the first essential in the enforcement of a pure food law was the law itself. That is all right, gentlemen, but you could have the best law on the face of the earth and have a wooden man at the head of it, and what good is it? I remember in Idaho some six years ago we had a legislature that passed two-thirds of the bills unconstitutionally, and one of those laws was the one under which I worked, and I never did as good work in my life as I did at that time under that law, and they decided it was absolutely unconstitutional and I couldn't have enforced it if I tried to. I simply told them it would cost them a thousand dollars to prove it and that it would make a fool of them in the end. Therefore I say in the light of what has come up in this convention, that the officer who enforces the law is of more importance than anything you can imagine. He ought to be a man without a stain or shadow of suspicion as to his character, his ability and his integrity. The commissioner stands as near to the people as the family physician, and he ought to be recognized as a man of intelligence, a man of judgment, a man of ability. I believe we ought to make a united movement to continue a man in office, unless he should happen to be an unfair man, because every year adds to his experience and makes him a better man for the position, and if he is a good man he ought to stay. I do not say this on my own behalf, because in twelve years I have been reappointed six times, first under the Republicans, then the Populists, then the Democrats, then Silver Republicans and then back under the Republicans again. But I believe, as has been said here, that every commissioner ought to be a man of experience.

The causes which led up to a pure food bill in Idaho were somewhat peculiar, and I will have to tell you about it in a roundabout way. After I was appointed commissioner I went to visit Mr. Bailey and Mr. McDonald and Mr. Heiner to learn the ropes, and they did not tell me the very thing I wanted to know, and that was this; where on earth all this poor food came from that was coming into Idaho. They did not tell me until a long time afterwards, and it took me a long time to find out that all the bum stuff that came into their respective states they said, "Ship it over into Idaho," and it kept coming and coming and coming and our people got so disgusted they thought everything was going wrong.

Two years prior to this the Dairy and Food Association got together and they had a law drawn up and it passed the legislature and along came one of these fellows that sold this stuff and got the ear of the governor and he vetoed the bill. The next year we got in and had a law quietly passed through the legislature and it got along all right until it got to the Senate and one of these fellows came along again and they telephoned for me to come back and they gave me the privilege of the floor of the House and Senate and they carried the bill in less than fifteen minutes, suspending the rules, and they only made one amendment, and that was that I should be the commissioner, and they actually legislated me into office. I have got a boy 21 years old, so there is hope for the commission if I should die.

So the pure food law was enacted. It is imperfect in a good many respects, but on the whole we have been doing like Mr. Bailey did and Mr. McDonald did, only in a more wholesale way, and I know of at least 18 cars of these goods that have been shipped into Montana and other points. Now it isn't an unmitigated evil, because Montana will have a pure food law next, and I want to say to you eastern people that that is the way to treat your neighbors and they will soon have pure food laws.

Besides being food commissioner I am also the horticultural inspector, and as soon as I get through fighting the bugs in the spring, spraying them with lime salt and sulphur and getting them out of the way, I start out enforcing the food law, and between the two I certainly have a picnic. The law did not provide for a chemist and they do not give me enough money to have very many chemical analyses made, and having a little knowledge of elementary and organic chemistry I conceived the idea that I would play chemist myself, so I went and saw Mr. Burd, the experiment station chemist, Mr. Harms, and Mr. Bailey's chemist, Mr. Tarter, and they gave me a few pointers, so I fitted up a case with a number of re-agent bottles and a Babcock test, with an oil tester and a lot of other things that I can't remember just now and began carrying this case with me

and I would walk into a store and before I got through they would be packing up half their goods for shipment back to St. Louis or somewhere else. By the use of the microscope I found whole brands of spices that were adulterated from 10 to 75 per cent. I found hundreds of barrels of vinegar that had a very large proportion of hydrochloric acid and sulphuric acid; the balance was acetic acid. I didn't know what the test was, but I knew enough to find the sulphuric acid that was in the vinegar.

I had a varied experience, and I thought the dealer and the manufacturers knew more than they did. I gave them credit for being wiser than they really were, so I concluded I would go to the groceryman and I made a trip to every town in Idaho, traveled night and day by stages, and I have ridden 170 miles without getting off, sleeping on the hurricane deck; I went to every town and preached to the merchants, sometimes in the middle of the night, sermons on pure food, and they would agree with what I said, but they were like Ananias, they didn't do it just right, it seemed to me, and I told them if there was anything they were not sure of, to send it to me and I would find out. Sometimes I couldn't find out, and they haven't found out yet. I simply wrote them I didn't have time, or something of that kind. But I was learning all the time. Then I went around and warned them something like this: "Now, gentlemen, we will settle this thing. All the law asks is honesty. You can sell anything under the sun that is good to eat or drink if you will label it what it is, but we will not permit coloring matter to deceive; we will not permit anything that is harmful, neither will we permit you to put anything that is fraudulent on the market, and if you are honest you don't need to fear any harm. But just the minute you begin to play tricks on me or the law, trouble is in store for you." And after getting all those goods out we only had eight men arrested. Seven of them waited around until they got it. There wasn't any use trying to get out of it.

I will tell you how I do business: I have been one of the institute workers for the commission, and one evening I went to Boise City and spoke before about 400 members of the Woman's Columbian Club, and the next day I had some people arrested and public sentiment convicted them. They never hired a lawyer. They simply fined them right there, and that was all there was to it. I find that public sentiment is a great thing. Every time I go to a town, if the women's clubs are there, or the merchants are there or the farmers are there, we get together and have a lecture. In addition to that I get Professor Burd to take a lot of these things: for instance, from a can of French peas we obtained 35 miligrams of copper and we coated a sheet of tin with that copper and took it to the state fair. Professor Burd has worked night after night to help out the work,

although he is a government chemist. At the state fair I talked pure food to the people that were gathered there, and in different ways we have worked up public sentiment. Lots of firms that used to sell goods out in Idaho as the very best, could not give them away to-day. They have to come around now and get permission to sell their stuff in Idaho, and the only way they can get that permission is to label it what it is. For instance, I go to a farmers' institute and ask the women to bring in samples of their lemon extract and other things along that line, and by the precipitate method I extract the oils. In one case out of 64 different brands 34 did not have an atom of oil in them, and the others ran from one-twelfth of one per cent up to 18, and I tried to explain to those people that a one per cent lemon extract was just one-fifteenth as valuable as a fifteen per cent extract. I take the reports of some of these other chemists along with me and show the people what they require and attempt to educate them along that line. I am stating these things because there are a whole lot of people in the east who have an idea that a great many men out in the mountains and on the western slope are about like their coal miners, but I want to tell you you were never so badly fooled in your life; they may not have the technical knowledge some of you have got, but they are the hardest headed men you ever saw, and they know straight up, and where the sun rises.

I forgot to say that whenever I find a bottle of colored catsup in a store I set it on the case and mark it: "This belongs to so and so; it is colored with coal tar dye." I had some square tins covered with copper that I got out of French peas and I would pin one of those on a can of French peas and set it in the store and mark it: "If you want your boiler coppered, eat French peas." Then I had a bottle of this sulphuric acid vinegar, and I put a label on that: "If your boiler is coppered, drink this vinegar and it will cut it off."

Now in regard to milk. There are people in San Francisco and Chicago that send out to our milkmen samples of "Freezene" which they guarantee to pass every pure food law, and guarantee to be perfectly healthful, etc. They are rank frauds, and when I met one of the firm in town one day when he was selling goods, I told him I condemned the whole thing and when he came back to my office I found he hadn't sold anything but had a lot to take back, and he said, "We don't care; we are making a barrel of money, and if the people want to buy it you can't touch me." But if we had a national pure food law we could do the business. Their idea is to bunko the people as long as they are allowed to. I found the milkmen all over the country using these things, and they soon got into trouble and their milk was dumped out in the street and they were publicly disgraced, all through these miserable frauds. There

isn't anything that I know of, that you can put into milk but what is prohibited by law; nothing that interferes with the normal action of the milk is allowed, and these people have caused many a poor farmer and dairyman who was struggling to make a living, to lose his business.

Now I don't wish to take up any more time, because you gentlemen have covered this subject so thoroughly, but I want to say the pure food movement in Idaho is marching on and we are just simply clearing these fellows out right and left, and the man who does business hereafter in our state has got to have a certificate of character before he can do business there, unless he does business with that class of people that are not fit inhabitants of God's country or any other, and it don't do to trust them, for you will never get your money. They are no good. But the respectable men of our country are all right.

In closing these rambling remarks that I have made here I want to say what was said to me here by a gentleman the other day. I asked him why it was that certain states in the east did not help more in the pure food movement. He informed me that one of the senators had told him that the senator from Idaho was a new senator, and it would not do to let him push an important measure like that through too quick. I thought that was a very narrow view for anyone to take. We are untrammelled west of the Mississippi river; we are not creatures of the trusts; we are free men; we believe in speaking what we believe, paying for what we get and treating people honorably and honestly. We think anything that wears pants is a man, and if he has got a good moral character he is a gentleman, and we don't want to do anyone any harm. I don't believe any commissioner wants to do any harm. I have lost more sleep over prosecutions than the man who was the cause of it. I don't like to do it. It isn't pleasant, but I would like to get at some of these manufacturers and have the law so amended this coming year that it will be dangerous for a man to appear in Idaho if he has ever sold bum goods in that state, for we will get him some way.

The resolution referred to, in regard to the quality of tin used for canning food products, was then read and referred to the Committee on Resolutions.

MR. JONES: We find that in condensed milk, owing to the fluxing used, it hardens and coagulates it in some way so that the milk is unfit for use. I am not a chemist and do not understand it, but perhaps the gentleman who offered the resolution can inform us on that subject.

MR. DUCKWALL: I think I can answer that in this way, that the fluxing of the can is done by the manufacturer of the can—that is, soldering the seams together. It is an entirely different thing from the tin coating. The tin

coating is put on by the tin manufacturers or tin dealers, and that would be an entirely different thing from the fluxing of the can by the can-maker.

MR. JONES: I would suggest that the resolution be amended and that that be put in, so that it would be a complete resolution on that subject.

CHAIRMAN BAILEY: I believe about the only thing left is the appointment of one or two committees. There is to be an auditing committee to audit the finances of the association, and on that committee I will name Mr. Jones, Mr. Noble and Mr. Leach. I have also to name the nominating committee, and I want to say that I have had this matter seriously on my mind for two or three days, realizing the fact that the officers who were to take charge of things for the next year would be responsible for the success of the association. I have gone over the matter as carefully as possible, and the committee I am about to name are men whom I believe you all have the highest regard for and I assure you I in no shape or manner know what their idea will be. The committee will be as follows: J. Q. Emery, Professor Scovell and E. A. McDonald. They will report to-morrow at the opening of the session.

The distillers meet here to-night at eight o'clock, and if there is nothing further we will adjourn.

A recess was then taken until 8 o'clock p. m.  
Friday, September 30th.

Congress met at 8 o'clock p. m., pursuant to adjournment.

CHAIRMAN BAILEY: This evening has been set apart for the discussion of Distilled Spirits, and I presume there will be something doing right away. The first on the program is Mr. Edmond W. Taylor, President of the Bottling in Bond Board.

#### ADDRESS OF EDMUND W. TAYLOR.

#### THE ADULTERATION OF DISTILLED SPIRITS.

The term distilled spirits, as used by the United States Bureau of Internal Revenue, comprehends both potable and industrial spirits of high alcoholic content. It also includes a species known as neutral or Cologne spirits which is sui generis as to character and commercial purpose.

One may properly classify as the potable distilled spirits, whisky, brandy, rum and gin, and as the industrial spirits alcohol and high wines, while neutral or cologne spirits may be defined as chemically pure ethyl alcohol manufactured for immediate use in adulterating or imitating the several potable species mentioned.

The genuine potable distilled spirits whisky, brandy, rum and gin while bearing to each other a generic relation of alcoholic content are differentiated one from the other by the specific

character of their respective secondary products. These secondary products in the new distillates are neither palatable nor wholesome, and each must be held on storage for aging before it develops into the beverages in demand under the trade names.

It is generally agreed that aging not only develops the flavors which are to characterize each species when it goes into the open market, but converts each distillate into a ripe and wholesome product. This custom of aging potable spirits gives it an enhanced commercial worth in the eyes of the consumer, and has vested in the reputation of the natural article, duly matured, a special competitive value.

I doubt if a better example of the fixed association of ideas could be cited than the popular connotation of age with the thought of whisky, brandy, rum or gin.

The two processes—distillation first, and maturation second—are not only generally understood to be implied, but the idea is crystallizing into official tentative standards for potable distilled spirits in the United States.

Such tentative standards have already been indicated by the U. S. Pharmacopoeia, by the United States Department of Agriculture, by the U. S. Food Standard Commission in a preliminary way, and by the National Association of State Dairy and Food Departments. Each incorporates the idea of these two fundamental processes as necessary to proper potable distilled spirits under established nomenclature. The minimum period of aging varies. The U. S. Pharmacopoeia fixes two years for the maturation of whisky. The U. S. Department of Agriculture in its recent bulletin giving illustrative standards governing imported food products specifies that brandy and whisky be properly aged by storage in wood to eliminate the greater part of the fusel oils, admitting the fusel oil content to the extent of .25, which is the same amount of fusel allowed by the Municipal Standard of Paris, France, while the German government admits .30 of fusel oil.

The National Association of State Dairy and Food Departments indicates four years as the proper minimum on domestic distilled spirits.

The United States Bottling-in-Bond Act requires a minimum of four years, while several prominent writers state that three years is adequate to provide for oxidation of the fusel oils present in the new distillates, and the conversion in whisky or brandy of the butyl and amyl alcohols into derivative ethers and aromas.

It is this custom of aging the natural whisky, brandy, rum and gin which furnished the motive and inspiration for an artificial substitute.

Something which could, by a tour de force, simulate the results of maturation and at the same time, and of first importance, save the expense, not to the consumer but to the manipulator.

Something which could be turned out over night

in large quantities disguised under the color of the natural products, and containing imitation secondary products, chemically derived from the butyl and amyl alcohols in fusel oils, be compounded with new neutral spirits and sold under the name and label of the real beverage demanded.

If you ask the rectifier, compounder or blender of these synthetic duplicates of the natural article which is the superior he will probably tell you that it is the one prepared in his own laboratory "while you wait," and that the natural article which is its prototype and model is much inferior.

He will probably tell you that neutral or cologne spirits are chemically pure, and if you remark that methyl or wood alcohol may also be chemically pure and ask if he would like a drink of the methyl because of this quality, he will probably decline your invitation.

The rectifier, compounder or blender will probably tell you that natural distilled spirits should be aged much longer than is customary in order to properly oxidize the fusel oil. This idea with him is but natural for it is with much complacency that he contemplates a barrel of natural whisky, for instance, lying tied up in the ricks of a bonded warehouse and out of competition, while he can be turning out 4,000 barrels of its duplicate, compounded with the very butyl and amyl alcohol derivatives which he decries.

But if he thinks the artificial substitute is superior to the genuine, you might say, then why has he not the right to make the improvement he claims and get the benefit of superiority in the public markets? Does he exploit this superiority as a matter of market value in his brands and on his labels?

He does not, but on the other hand, he constantly and uniformly runs the hazard of having the consumer confuse his artificial product with the natural. He undertakes by the obliteration of every sign of artificial over-night origin to convey the impression that there are no chemically pure neutral spirits in his article, that there are no fictitious essences, and he selects every word and the whole collocation of words which he puts upon his label, with the premeditated design of identifying his output with the aged output of the distiller.

He advertises it in the same manner, and if it had not been for the interposition of the U. S. Government's Bottling-in-Bond Act the real commodity would have been exterminated in this country as a plain economic proposition.

The same labels were being put on the natural and artificial products and the fiction in the case of the artificial has furnished its promoters with a golden margin of profit which has swept it before the natural into every current and channel of the liquor trade, until a vested interest of such magnitude has grown up that it seems almost to consider itself as immune from the ethics of com-

merce. But the Bottling-in-Bond law, while identifying the natural product of such distillers as choose to meet the conditions required, is not compulsory, and as only a few distillers have taken advantage of it, and as the costs of thus telling the truth are heavy, small advertising margin is left to this handful of distillers, and the general public knows little of the safeguards of its provisions. The markets are still flooded with the make-believe, and it may be conservatively stated that 80 per cent of the so-called whiskies, brandies, gins and rums of American manufacture today are either out-and-out imitations or attenuations and sophistications of the genuine. These artificial products cannot get the Bottling-in-Bond stamp, and the rectifier looks with jealous eye to any spreading of the news as to this method by which the public can now identify the natural article in its original integrity.

Now neutral or cologne spirits, as we have stated, is not whisky or brandy or rum, but chemically pure ethyl alcohol, which can only undergo change by taking some foreign matter in solution, and yet 58,000,000 gallons of it were manufactured in the United States during the last fiscal year and 56,000,000 gallons of it while still new went into consumption under the trade names of the potable distilled spirits surreptitiously sacrificing its boasted chemical purity to the expediencies of the trade.

I have no data as to the quantity of chemicals used in the cologne spirits to give it the derivatives of fusel oil, or how much young brandy, whisky or rum was used in the concoction for flavors, but it must have been enormous from the needs of the case. That the practice of using these chemicals is general no one in the trade can doubt from the circulars and samples which are constantly received and from information from official sources.

The man who makes natural whisky, brandy or rum is known as a distiller. The man who formerly rectified high wines was once known as a rectifier. The man who now produces the new neutral spirits is no longer known as a rectifier, but as a neutral spirit distiller. What, then, is the status of the contemporary rectifier? He is described in Section 3244 of the Revised Statutes of the United States as follows: "Every person who shall by mixing such spirits, wines or other liquids with any materials manufacture any spurious imitation or compound liquors for sale under the name of whisky, brandy, rum, gin, etc., is to be regarded as a rectifier."

The rectifier must pay a special tax and is different from a distiller or a wholesale liquor dealer per se. Notwithstanding this you will find that he always goes before the public as a distiller or a wholesale liquor dealer in order to cover up the origin of his output. Under the law he cannot

make his synthetic beverage within 600 feet of a bona fide distillery.

Now in order to get specific information as to the extent of these adulterations in the United States we need only turn to Volume IX of the last census, page 616, to find the following official statement:

"Most of the distilled liquors consumed as a beverage by the American people pass through rectifying houses. The different classes of rectified spirits range from the cheapest concoctions of neutral spirits and drugs to the simple blending of young and old whisky."

If we turn to the figures just furnished by the Internal Revenue Bureau for the last fiscal year, we find that although about 136,000,000 gallons of distilled spirits constituted the entire manufacture for the year, and while 116,000,000 gallons were withdrawn for consumption, 104,000,000 gallons were rectified. Now if you will take into consideration again that here are left in the U. S. Government bonded warehouses less than 190,000-000 gallons of potable distilled spirits as an available aging supply at this juncture, you can get some idea of the extent of the rectifier's operations.

Perhaps a better idea may still be secured by comparing the 104,000,000 gallons rectified with the figures covering bottling-in-hand operations, viz., only 1,000,000 gallons or merely one per cent.

The rectifier seeks a famous district as a locus operandi. Kentucky, Pennsylvania and Maryland having won a reputation for whisky are selected fields. Having secured the geographical prestige of location he proceeds to throw into the general market synthetic artificial whisky, selling every drop of it under labels falsely stating its genuineness.

Some impression of this practice may be gathered from the following excerpts from the market page of the Louisville Courier-Journal of Sept. 28, 1903. It reads:

"A trade publication calls attention to the fact that 8,000 barrels of whisky leave Louisville every week, though much of this is compounded goods made in the rear of rectifying houses or upstairs out of Peoria spirits and about 20 per cent of pure whisky added to give it flavor."

Dr. Albert E. Leach mentions as flavorings in ings in artificial whisky, oil of wintergreen and artificial fruit essences, and states that often a small amount of pure whisky is added to give the neutral spirits concoction more flavor.

Dr. Leach quotes the following recipe for a "blended" whisky of low grade:

32 gallons of neutral spirits.  
16 gallons of water.  
1 ounce of caramel.  
1 ounce of beading oil.

Now I find quoted by a trade writer as a high class "blend" the following admixture:

5 gallons old straight whisky.  
10 gallons cheap whisky, 95 per cent proof.  
35 gallons neutral spirits, 95 per cent proof.

Now of course in blending it is possible that two genuine whiskies may be put together, but as there is absolutely no requirement that the respective ages be indicated in the finished result you will find the census is correct in speaking of the blending of old and young whisky even when only whisky is used. To mix one barrel of six years' old whisky with six barrels of six months' old whisky and sell it all for old whisky is a cost saver.

The U. S. Government provides no supervision over "blending" or "rectifying" and cares only for accurate reports as to proof gallons used.

The natural product of the real distiller is safeguarded by the U. S. Government officer from the grinding of the grain until the whisky is withdrawn from bond. As it ages behind the government locks in the bonded warehouses it is protected from the addition of foreign matter at all times.

When it has matured for four years or more it may be bottled-in-bond by special permit. A government gauger secures it from the government official in charge of the storage warehouse and transfers it to the government official in charge of the bonded bottling house.

The law provides that nothing can be added to it except pure water to reduce it back to 100 standard proof.

Under the watchful eye of the government supervisor green strip stamps describing essential features of the contents are affixed, having been prepared at the U. S. Bureau of Printing and Engraving, and issued by the Commissioner of Internal Revenue.

After this little green stamp is affixed over the cork of a bottle of whisky or brandy or rum it tells you the age of the contents. It tells you the proof. It tells you the name of the distiller. It tells you the location of the distillery. It tells you the state where made. It tells you the quantity in the bottle. It tells you the date bottled. It tells you by its presence over the cork, under the provisions of the act, that no foreign substance has been added.

The distiller who bottles in bond has to meet a serious economic difficulty and must be a great believer in the adage that "Truth is might and will prevail"; but the public seems to be learning something of the act and the distiller hopes to survive.

He recognizes that beside the existence of vested interests in the trade, that the consumer also has vested interests to be considered.

He believes that if the rectifier or blender or compounder considers the synthetic or artificial mixture as superior to the natural spirits he should identify it in justice to the artificial prod-

uct. If inferior it should be identified in justice to the natural product, and above all, whether superior or inferior, it should be identified in simple justice to the consumer.

The brandies of the famous Charente district are imitated with neutral spirits. The English parliament has been treated to a startling expose of "blending" methods within the current calendar year. Scotch and Irish whiskies of supposed repute are expanded with silent spirits in the very bonded warehouses of the English government under the inland revenue laws of Great Britain, and the London Lancet has exclaimed that no wonder the word "blend" is etymologically allied to the word blind.

At Schiedam, Holland, where there are 200 famous gin distilleries, the municipal authorities have a supervisory system of labeling which identifies the genuine article.

Russia seals its vodki in bottles and the penalty of manipulation is fifteen years in Siberia.

Identification in food and drink is a sign of the times.

He who runs may read it in the United States.

Within the last eight years our National Congress has enacted the filled cheese law, the mixed flour law, the bottling-in-bond act, the oleomargarine high tax, the clause of the agricultural appropriation bill excluding from our ports of entry all mislabeled products, the Sherman law as to domestic geographical origin. It has created a U. S. Food Standard Commission, and the next congress will have before it the insistent measure for general identification in food and drink in interstate commerce, which, whatever its temporary defects may be, at least incorporates the imperishable principles of fair play.

CHAIRMAN BAILEY: If there are no discussions to follow this paper we will pass on to the next, Mr. R. M. Patterson, Assistant Commissioner of Illinois, on "Needed Legislation for the Control of the Purity of Distilled Products."

MR. PATTERSON: Mr. President, and Members of the Association—This is a question with which I am not entirely familiar, except in a general way. I have drank more or less of liquors in my life, and I have been a close observer of the beverage in the last four or five years. While I did not anticipate being called upon or placed upon this program to speak upon this line, inasmuch as I have been chosen I will give my views of the matter, as I see them.

ADDRESS OF RUDOLPH M. PATTERSON.

#### NEEDED LEGISLATION FOR THE CONTROL OF PURITY OF DISTILLED PRODUCTS.

There is possibly no channel of commerce affording so wide a field of operation, with such

lucrative results, as the adulteration of drinks and liquors.

The ways, means and results of this practice are almost unlimited and certainly unappreciated. The greater percent of the people are affected, the original producer most of all. His products so carefully and honestly nurtured and harvested, poorly paid for at the best, are diverted and perverted by avaricious manufacturers. The people or the consumers are made to suffer. The greed for money is the cause—a deceived, diseased public is the result.

Adulteration of drinks and liquors has become an industry second hardly to any in the land. Its growth has been marvelous in the past ten years. Its octopus-like form has grasped every source of commerce, while its tentacles have reached into every field where nature has provided growth whereby mankind is nourished. With these conditions surrounding us, our only remedy is in the enactment of more stringent laws, both national and local, which will reach every avenue of fraud and deception used in the preparation of this product for the market.

I will speak this evening of the adulteration of liquors and alcoholic beverages and of the almost universal practice of using poisonous substances and chemicals in their manufacture.

There are indeed but very few of so-called pure beverages kept for sale anywhere bearing a legal label as to their real character. Here is an extremely dangerous condition of things. As a rule such drinks are not taken for their taste, but for the ultimate effect. As a result the consumer seldom thinks if the whisky or other alcoholic drink placed before him is genuine or doped with chemicals and other highly deleterious matter, and many times it may be he does not care.

When the enormous quantity of liquor annually consumed by the American people is considered, the results of these adulterations may be partially appreciated.

A very careful and laborious research through statistical files shows that there was consumed in the United States last year about twenty gallons of fermented liquor to each male inhabitant of the United States. There are about 160 drinks in each gallon, which would give each male inhabitant about 3,200 drinks for the year or nine each day. It is estimated that over one-half of our population drink no intoxicants. This would give the user of alcohol sixteen drinks each day of the year.

These same statistics show that more than 7,500,000 persons have died in Europe of alcoholism. More than were killed by all the wars in the 19th century.

There is annually spent by the people of the United States over one billion dollars for liquors. Five times as much as is spent for literature. And how few realize this enormous sum of money—

enough to pay the bonded indebtedness of the United States six times each year. And for what—adulterated, poisoned, chemically doped whisky, wines and alcohols.

It is stated by authorities of the government that more than 80 per cent of all whiskies now on the market in the United States are adulterations, base imitations and injurious decoctions. Figures from Pennsylvania alone show that 93 per cent of the whisky sold there is what is technically termed "blended" whisky. This means that for a barrel of 48 gallons, some 40 gallons of cologne spirits are used. Cologne spirits is ether from whisky secured in passing from the still while in process of distillation. It has no taste but has a pernicious effect upon the human system. To this 40 gallons of cologne spirits are added about four gallons of straight whisky, two gallons of prune juice, two gallons of peach juice, a little vanilla or some flavoring extract to give it taste. The decoction is stirred up, bottled, given a fancy name and sold over the bar or on the table for from 75c to \$2 and even more per bottle.

The commissioner of internal revenue is fairly good authority on this matter. I will quote from his last report in which is stated that the food class of stimulants—gin, whisky, brandy, wines, rum, etc.—are adulterated by the neutral or cologne spirits of commerce. The relative proportion of manufacture for the last year, in round numbers was: 11,000,000 of alcohol; 341,000 of high-wines; 20,000,000 of Bourbon; 1,000,000 of gin and 37,000,000 gallons of adulterant.

Two distinct processes are demanded in the manufacture of whisky before it becomes a proper article of commerce as a beverage or medicine under the generic term, "food." It is, first, the result of a distillation of the fermented mash of grain which produce an alcoholic liquor; second, this alcoholic liquor must be stored in wood for a period of one year in order to mature. Both processes are necessary; both are expensive. Because of this necessity of maturation whisky differs from nearly every other commodity. The manufacturer of other goods can market his wares as the factory turns them out. The distiller of pure whisky must wait. His output must mature, and from this fact makes possible the adulteration in order to realize more rapidly and clearly upon his product. And in this, the "rectifier," the "blender" and the "adulterator" generally gets in his fine work.

To what extent is this illegal business indulged in?

Figures from the last report of the government show that last year 101,669,015 gallons of spirits were withdrawn from bond; there were used for scientific and medicinal purposes 988,565 gallons; 535,088 were bottled in bond and 98,614,964 were "rectified." That means adulterated. More than 80 per cent of the grand total of this whisky adul-

terated for last year. And many of you probably paid as much as 25 cents for one drink of this adulterated stuff bearing some fancy name. That's all.

Eighty-five per cent of adulterated goods are sold in barrels and 15 per cent in bottles. It is when packed in glass that the deception becomes highly artistic. There is not a single bottle of compounded whisky on the market to-day which is labeled as "compounded" or "blended" or "rectified" or in any manner to indicate its real origin, and there is not one of these bottles but what purports to be the real thing—whisky.

The bottling-in-bond act of congress in 1897, if properly enforced would afford us the protection necessary for purer goods in this class. It protects the consumer. It specifically states that no foreign substance can be added to the whisky and nothing extracted from it except the charcoal and solid matter by straining through felt sacks. It even prevents the presence of any adulteration within the walls of the bonded bottle house. It is bottled under the watchful eye of a government official who follows it closely step by step. A green government stamp is fixed over each cork and every bottle bears a certificate from the government of its genuineness and purity. This tells you the age of the contents, gives you the proof of the whisky, the name of the distiller, location of the distillery, quantity in the bottle, date bottled and all that.

Official control is the only remedy for this evil of adulteration in these products. The question is still in its infancy but the time is not far distant when the people of the United States will demand stricter legislation in regard to distilled liquors and beverages. The manufacturer will be required to place upon each barrel, keg, jug or bottle the exact ingredients which they contain, so that the consumer may see at a glance just what he is buying.

You are perhaps familiar with the process of distillation of these goods, either from experience or from other knowledge. You are familiar with results of foul air upon living things. You should be familiar with results, then, from foul matter consumed through the system by the stomach—no matter whether eaten or by drinking.

Statistics annually present increased tables of rheumatism, stomach diseases; stomach troubles that lead to other ailments that lead to weakened systems and ultimate loss of life itself. The distresses and miserable conditions charged to adulterated drinks can not be told in a day's talking. The misery cast upon mankind generally by such things cannot be reckoned. I will not attempt it.

The state pure food commission of Illinois has done much good in the decrease, control and elimination of deleterious, harmful, illegal adulterations, and to alleviate the distressing conditions that confront us, and with the aid and in-

fluence of public spirited people everywhere this serious problem may be determined and all people be given purer liquors and drinks for all usages. Nothing but extraordinary means can stop the tide of adulteration sweeping over the country, making its most vicious, shameless manifestations in the counterfeiting of alcoholic beverages.

Now, if there is any question any one would like to ask me upon these matters, so far as I am concerned as a layman, I would be glad to answer.

MR. MCPHERSON: About your statement in regard to taking sixteen drinks a day—is that right?

MR. PATTERSON: That is a matter I haven't gone into very deeply, but about sixteen drinks.

MR. MCPHERSON: I always thought there was something wrong with the American people.

MR. BABBITT: May I ask you where you get that receipt of two gallons of prune juice and two gallons of peach juice, used by the rectifier?

MR. PATTERSON: What is your name, sir?

MR. BABBITT: Babbitt is my name.

MR. PATTERSON: Stand up. That's proper. Now what do you ask me?

MR. BABBITT: I asked you where you got that receipt for a hundred gallons.

MR. PATTERSON: I told you when I started this paper that I was not a scientist, but from statistics I have gathered from time to time I find that they use about two gallons of prune juice to mix up and age and blend the whisky. Do you say they don't use it?

MR. BABBITT: I most assuredly do.

MR. PATTERSON: They don't use any prune juice?

MR. BABBITT: I don't say they don't use any prune juice. You remarked that they used about two gallons of prune juice and two gallons of peach juice to make one barrel of whiskey.

MR. PATTERSON: I said generally. I don't say that is exactly right at all, but I say that from my observation that is about what they use, and I will ask you: What do they use the prune juice for?

MR. BABBITT: They use a small amount of prune juice for some people sometimes. I never heard of a quarter or a half gallon ever being put in a barrel of whiskey.

MR. PATTERSON: What do they use it for?

MR. BABBITT: For flavor—to tone it down, smooth it up and make it palatable.

MR. PATTERSON: Do they say it out on their labels?

MR. BABBITT: They don't say it on their labels.

MR. PATTERSON: Why don't they?

MR. BABBITT: Because there is no necessity for it.

MR. PATTERSON: Don't they do it to make it appear it is older?

MR. BABBITT: Doesn't the barrel itself show it is blended?

MR. PATTERSON: The barrel?

MR. BABBITT: Yes.

MR. PATTERSON: You don't say to this audience that you go in and drink out of a barrel.

MR. BABBITT: I say to this audience that no man ever brought a barrel of blended whiskey in his life thinking he was getting straight whiskey.

MR. PATTERSON: Is that so? Did you ever see in your life on a label "Blended goods"?

MR. BABBITT: I don't know.

MR. PATTERSON: Why don't you answer yes or no?

MR. BABBITT: I don't know what that has to do with it.

MR. PATTERSON: You got up here to put questions, didn't you?

MR. BABBITT: You asked if anybody had any questions to ask.

MR. PATTERSON: You asked a question. Now let me ask you a question. Did you ever see in your life on a label "Blended or Compounded Whiskey"? Answer that question yes or no.

MR. BABBITT: No, I never did.

MR. PATTERSON: That is a gentleman now. Now we are getting along fine. That is what I am advocating, that if you are selling whiskey you have a right to tell the people of the United States what they are buying, haven't you?

MR. BABBITT: Yes, sir.

MR. PATTERSON: And I say in the bonded goods that they do that generally and most always, because it is under the government control, and it is presumed that the Americans have a right to think, anyway, that they are getting pretty good goods, 100 proof, but in the blends they don't do that, do they?

MR. BABBITT: They don't.

MR. PATTERSON: What proof do they get in the blends, really?

MR. BABBITT: They get 100 proof frequently, sometimes 80 or 85.

MR. PATTERSON: Did you ever see it on a label in your life, 100 proof?

MR. BABBITT: Did I ever see it?

MR. PATTERSON: Yes.

MR. BABBITT: Yes, lots of times.

MR. PATTERSON: You can't show me a label on a blended or compounded or rectified package that says 100 proof.

MR. BABBITT: That whole matter can be discussed when the other side gets a hearing.

MR. PATTERSON: I know, but when you get up to be asked questions you have got to be asked other questions too.

MR. BABBITT: I will answer your other question, and I will refer you back to the gentlemen that are favoring bottling in bond.

MR. PATTERSON: I don't know who is favoring bottling in bond, but I will tell you as a casual observer I don't care anything about what they do or what you do, but I am speaking as an individual. I know what effect it had on me.

CHAIRMAN SCOVILL: If there are no other questions we will hear Professor LaBach's paper next.

#### ADDRESS OF J. O. LA BACH.

#### STANDARDS FOR DISTILLED LIQUORS.

The art of distillation is very ancient and as applied to the art of making alcoholic beverages was probably first practiced in those countries surrounding the Mediterranean. It was the belief in olden times that distillation separated the true essence or spirit from a body so treated, hence alcohol was called spirits of wine, for wine was the only source of alcohol in early days. The distillation was crudely carried on in "pot" stills and by storing and aging this product it was converted into the beverage brandy. And as the southern civilization spread to the more northern parts of Europe it is no more than likely that the art of distillation was also carried along. In the colder parts of Europe the principal source of alcohol was the fermented cereals like beer and ale. I do not doubt that this was the beginning of the manufacture of whisky. Of course the art was in a very crude state, but it was a beginning. And so we find that whisky was early made in Ireland, England and more particularly in Scotland. No doubt because these countries did not produce grapes. If there had been vineyards the story might have been different. Some trace the manufacture of whisky as far back as the 12th century. It certainly was a well established industry in the 16th. In those days the procedure was practically the same as now. The grain was malted, fermented and distilled in pot stills and the resulting liquor was stored away until it was considered fit for use. It must have been a very uneven product because at that time the science of fermentation and distillation was but little understood. But within the last 100 years the art of distillation has been very much improved and our stock of knowledge of the laws governing fermentation and of the riping of distilled liquors has increased enormously. Now it is possible to produce uniformly by the use of pot stills whiskies, brandies and rums of great merit as beverages.

By the use of pot stills the acids and higher alcohols, fusel oils, as they are more commonly

called, are distilled over along with the alcohol. It is the oxidation and combination of these bodies when subjected to the right conditions that makes the alcoholic distillate whisky, brandy or rum according to the nature of the fermented material from which it was distilled.

The patent stills like Coffey's apparatus and its modifications produce an almost chemically pure alcohol of very high proof, 180 proof and more. The purpose of these patent stills is to eliminate all those acids, fusel oils and other bodies which naturally distill over in the pot still, and to produce an alcohol as strong and as pure as possible from a chemical standpoint. This high proof alcohol is almost odorless and tasteless, hence its trade name—neutral spirits or silent spirits.

There is a popular error that fusel oil and its derivatives, when found in a distilled beverage like whisky, brandy or rum, are impurities. In alcohol used for technical or scientific purposes this would be true. But in the case of alcoholic beverages such an idea is entirely wrong, for they are the associated bodies which give to alcoholic liquors their special and valued character and to them is due the characteristic flavors of the different varieties of whisky and brandy. These secondary bodies produced in the process of fermentation and distillation may be defined as the volatile bodies that are not ethyl alcohol, that is, our ordinary alcohol. In distilled beverages the presence of these "secondary" bodies is absolutely essential to develop the characteristic flavor, and without them the liquor would be flat and featureless. These secondary compounds are produced in the fermentation and in the distillation, and by storing in wood for a suitable length of time they are more or less altered by slowly oxidizing and combining one with another with the final production of characteristic ethers and other bodies, and so starting out with a new distillate of a more or less harsh taste and odor, we finally obtain, after a time, a beverage highly agreeable to the nose and palate.

These "secondary" compounds are found naturally in all distilled spirits, being more plentiful in liquor made in a pot still. They are composed mostly of fusel oil, which is a mixture of the higher alcohols, Propyl, Butyl, Amyl and Hexyl alcohol; and the ethers, like ethyl acetate, ethyl pelargonate, amyl, butyric and valerianic ethers, small quantities of aldehyde, volatile oils, furfural and volatile organic acids, which, by combination with the various alcohols, produce ethers.

In mature whisky the proportion of higher alcohols to ethers is about two (2) to one (1), in brandies they are about equal in amount, while in rum there is a larger per cent of ethers than of alcohols, and it is on account of the varying proportion of the constituents of these "secondary" compounds that gives whisky, brandy and rum each its own flavor, and gives to each variety of any one of these its own special flavor and

bouquet. I want to emphasize the point that in accomplishing these oxidations and combinations time and suitable storage are the great factors. The liquor must be stored where it is dry and the air can have but limited access. Experience has shown that storage in wooden casks and housing in a warehouse where the circulation of air can be regulated fulfills the conditions best. It now only takes time to mature the liquor to its perfection.

The compounded or so-called rectified whisky is made from neutral or silent spirits, to which a small amount of genuine whisky may have been added to round off the flavor. But the chief dependence is placed upon artificial aging and flavoring compounds in order to imitate the genuine article. These artificial flavoring and aging compounds are mixtures of alcohols and ethers derived in many cases from fusel oil, and their use is but a crude imitation of what nature takes years to do. Any harshness of the mixture is usually softened with prune juice or some sweetening agent, and the whole is colored, usually, with caramel (burnt sugar). After it is all finished, we have merely a ready-made imitation of a time-honored article made in an entirely different way.

I want it understood that compounded whiskies, brandies and rum are legitimate article of trade. They may or may not be more harmful than a properly matured, genuine whisky; that is not the question. The point is, they are imitations of an old and well-established production which has gained its name and reputation by certain methods of manufacture, and so the word whisky, or brandy, as the case may be, should not be used upon the label of compounded goods without some qualifying word that will clearly make known its true character. If any one prefers a compounded liquor, he should be allowed to buy it; and he should also be able to identify it by the label on the package. And vice versa, if any one wishes a matured, genuine liquor, *he, too*, should be protected. I might say in this connection that the United States bottled in bond act protects the purchaser of genuine American whisky by affixing a stamp over the cork of each package guaranteeing its age and freedom from sophistication.

Because vanillin is the chief flavoring principle of the vanilla bean is no reason why a solution of vanillin sweetened and colored should be called vanilla extract. It is not vanilla extract because you can only get all the flavoring principles of the vanilla bean by certain methods of extraction, and a mere solution of *some* of the flavoring principles is only an imitation of the true extract, and, as I have said before, some may prefer it to the true extract. That is a matter of taste.

And so it is with whiskies and other distilled liquors. By the use of synthetical preparations the bouquet and flavor of the genuine article may

be imitated, but it is by no means entitled to the unqualified word whisky, or brandy, as the case may be.

As to the proper length of time to age whisky, it seems to be the consensus of opinion of those who have had large experience in its manufacture and sale that it does not attain sufficient ripeness for use as a beverage until it is four (4) years old; some would make the minimum five (5) years. The United States government requires whisky to be stored in wood not less than four (4) years before it can be bottled and receive the government stamp guaranteeing its genuineness and age.

It seems to me that the whole question regarding distilled liquors resolves itself into a question of proper labeling. Much has been said pro and con upon the healthfulness of this or that product, but I do not find any definite proof in favor of either, though no doubt most of us have our own opinions in the matter. And in the light of the proper labeling of these products I suggest the following definition and standards for whisky, brandy and rum:

#### STANDARDS.

*Standard whisky* is the distilled product of the fermented cereals, rye, corn or malt, or mixtures thereof, aged in charred or uncharred wood for not less than four (4) years. It should not be less than 100 degrees proof, or 50 per cent of alcohol by volume, and should not contain more than .25 per cent total solids (extract) when dried at 110 degrees C., nor should it contain more than .25 per cent fusel oil when calculated to a basis of a whisky 100 degrees proof. It should have an acid reaction, with not more than .1 per cent free acids, calculated as acetic acid. It should be free from all added oils, acid, essences, flavoring materials, sweetening agents and other chemicals, and should not be subjected to any mechanical or chemical treatment for the purpose of artificial aging. It should be free from all coloring matter and solids (extractives) except those extracted from the charred or uncharred wood in which it was stored.

*Malt whisky* is whisky prepared exclusively from malt.

*Rye whisky* is whisky made from a mash containing more than 50 per cent rye.

*Bourbon whisky* is whisky made from a mash containing more than 50 per cent corn.

*Blended whisky* is whisky made by mixing two or more whiskies of different ages or brands, but otherwise conforming to the requirements of standard whisky. The proportions and ages of the whiskies used in the blend should be stated plainly upon the label.

*Compounded or so-called rectified whisky* is a whisky made from cologne, neutral or silent spirits, that is, pure alcohol, with or without the use of some genuine whisky, and also to which solids, sweetening agents and artificial flavoring and coloring matter may be added. Compounded whisky

should be plainly branded upon the labels its true character.

*Standard rum* is the distillate from the fermented juice of the sugar cane or from molasses made from the concentrated juice of the sugar cane, and aged for not less than four (4) years in wood, and not less than 100 degrees proof. It should have an acid reaction and be free from all added oils, acids, essences, flavoring materials, sweetening agents and other chemicals, and should not be subjected to any chemical or mechanical treatment for the purpose of artificial aging, and should be free from all solids and coloring matter except that extracted from the wood in which it was stored.

The use of words upon the label like "Jamaica," "West Indian," "New England" and others implying a certain local origin, should be restricted to rum made in the locality indicated by such qualifying words.

*Standard brandy* (potable brandy) is the distillate from wine, aged for not less than four (4) years in wood, and should not be less than 100 degrees proof or 50 per cent alcohol by volume. It should not contain more than .25 per cent total solids (extracts) when dried at 110 degrees C., and should not contain more than .25 per cent fusel oil when calculated to a basis of a brandy 100 degrees proof, and it should have an acid reaction. It should be free from all added oils, acids, essences, flavoring, sweetening agents and other chemicals and should not be subjected to any mechanical or chemical treatment for the purpose of artificial aging, and should be free from all solids and coloring matter except that extracted from the wood in which it was stored.

The alcoholic liquors distilled from the repressings and refuse of the wine house should be labeled to show their true origin.

The word "cognac" and others implying a local origin should be restricted to brandies made in the localities indicated by the use of such words.

Brandies made from fruits and berries should conform to the requirements of standard brandy as regards purity and age, etc., and should in every case be plainly labeled to show their true origin.

CHAIRMAN SCOVILL: The next is an address on the subject of "The Manufacture and Ripening of Distilled Products" by Mr. George Diehl, secretary of the Bottling in Bond Board.

ADDRESS OF MR. GEORGE DIEHL.

#### THE MANUFACTURE AND MATURING OF DISTILLED SPIRITS.

The importance of the distilling interests of the United States, as manifested by the large quantity of grain and fruit converted into potable liquors, and the quantity of these liquors consumed by the American people, seems to render the subject

a proper one for discussion before this Congress, not particularly for the purpose of examining into the purity of the various products, but for the purpose of exploiting the methods of manufacture and of establishing standards for each class.

During the fiscal year of 1903 the production of distilled spirits in this country was the output of something over 2,400 distilleries. The quantity of grain alone used was, in round numbers, 30,000,000 bushels; two-thirds of this was corn, one-sixth rye, and nearly one-eighth malt. This produced something like 134,000,000 gallons of distilled spirits. Of this amount only about 48,000,000 gallons were potable, the balance being alcohol or neutral spirits. Besides the grain production there was distilled from molasses 2,000,000 gallons of rum, from fruit over 6,000 gallons of brandy, and by a mixed process about 2,000,000 gallons of gin.

The potable liquors considered herein are whisky, rum, gin and brandy. The non-potable are alcohol, high wines and cologne or neutral spirits, also called silent spirits. The alcohol is largely used in the arts and sciences, while the silent spirits are used almost exclusively for the expansion, attenuation and adulteration of the potable liquors above mentioned. Potable spirit has left in it, after the process of distillation, certain properties or characteristics which vary, according to its derivation or process of manufacture. These characteristics give to each class a specific difference from each other class of spirit; hence the names whisky, rum, gin and brandy. Each of these is susceptible of sophistication with neutral or cologne spirits, which is a silent spirit, from which all the characteristics, except ethyl alcohol, are eliminated by fractional distillation.

As whisky is the chief potable species of distilled spirits, both in quantity of manufacture and demand in this country, I will aim to touch briefly upon its processes, recognizing that the chief value of so cursory a treatment consists more in inviting attention to the general subject than in offering any significant data. The matter will bear scientific study at first hand by the chemist and food commissioner, and I believe it is the sense of the manufacturers of potable distilled spirits that definitions and standards should be established by food control authorities which, without working harm to any legitimate interests, will insure the protection of generic names to the natural products, and differentiate from them by some adequate words the artificial products, too often conceived and prepared in sophistication.

Natural whisky is the outcome of two distinct processes. The first process is a distillation of the fermented mash of grain into low wines or singlings, and the redistilling of these low wines in a pot still, known as a doubler. The second process is that of aging the resultant product of this double distillation in charred oak barrels. Both

these processes are under the supervision of the Internal Revenue Bureau of the United States government, and are subject to government inspection from the time the grain is ground for the mash until the aged whisky is withdrawn for the market. Government officials are stationed at the distillery plants and a record of the kind and quantity of grain used is kept for the revenue department. The government officers have keys to all the distillery vessels and utensils. The weighing of the grain and its distribution in the hoppers must be carried on under their watchful eyes. They report the temperature and gravity of every fermentation, and take the proof of singlings and doublings after the distiller's beer is run through the stills.

The proportion of grain used by a distiller determines the nomenclature of his whisky. If he uses over 50 per cent corn in his mash, it is known as Bourbon whisky. If he uses over 50 per cent rye, it is known as rye whisky, while the term malt whisky is supposed to imply that only malt is used.

The selection of distillery sites is sometimes made with reference to railroad facilities and other strictly commercial advantages, but experience has taught that the finer whiskies are produced at distilleries located near springs or streams containing appreciable quantities of limestone. The use of sound, clean grain is of first importance. Once having determined as to whether Bourbon or rye whisky is to be made, the proportion of small grain used depends on the individual methods of the plant, as does the exact temperature of the scald at which the meal is imparted to the mash. The temperature up to which the scald is run is again arbitrary, but it is a noticeable fact that the makers of high grade whisky do not "cook" their grain, but only scald close to the boiling point, 212 degrees Fahrenheit, and do not attempt to gain an excess of extractive matter from the grain. The scalded meal is run into coolers equipped with copper worms and slowly cooled down to a given temperature by the transmission of cold water through the coils. The fermenting tubs are then "set" at a fixed temperature by the combination of spent beer of a previous distillation and the cooled mash. The gravity at which a tub or fermenter is "set" is determined in each case by the judgment of the particular distiller.

"Distiller's yeast," made from grains, is used to aid in fermentation, and the fermentation periods are broadly fixed by the government at not less than seventy-two nor more than ninety-six hours. When the proper attenuation in gravity and the proper rise in temperature are reached the beer is run through the first still and converted into singlings by a careful vaporization. Here again the distiller of high grade whisky does not try to get too much of the volatile resources of the beer. This first distillation is condensed in the copper

pipes of a flake-stand filled with cold water, from which it runs into the singling tub at, say from 65 to 75 per cent. It then goes through its second and final distillation, going through another flake-stand for condensation; from the condenser it comes into the whisky tub, ready for barreling, and must be barreled at not less than 100 proof.

When whisky is thus ready for barreling it is not potable, but has a disagreeable taste. It contains the potentialities which maturation must develop. These characteristics of new whisky are not wholesome and nature alone can convert them into aromas and essences.

The common idea that new whisky can be made old by artificial processes, by which fusel oil, furfural and other aldehydes are eliminated, seems untenable, as the result is merely alcohol and not whisky. Chemically pure spirit is flavorless and unchangeable so long as it has no other body in solution, but aged whisky becomes more complex in its chemistry. The alcohols may simplify toward ethyl alcohol, but characteristic by-products are formed by intricate chemical processes.

The amyl, butyl, propyl and other alcohols contained in the fusel oil are oxidized as the whisky lays on storage. "Fusel by aging," says Dr. Albert E. Leach, "becomes gradually transformed into the compound ethers that impart distinctive bouquet and flavor."

Right here it would be proper to say that there is a popular, though mistaken, idea that fusel oil is a mark of impurity and should not appear in whisky. As a matter of fact there is no palatable whisky that does not contain fusel oil, or its derivatives, and no natural whisky made from the process above described is free from it.

In other words, should the fusel oil be entirely extracted from whisky, the essential characteristic of the whisky would be eliminated.

There is no question here, I believe, as to whether natural whisky is deleterious to health, nor is there any comparison of its merits with those of imitation or blended or sophisticated whiskies.

The word whisky is a fixed term, having a definite meaning, and the distiller appeals to this body to define it accordingly.

The purchaser of whisky, whether he call it a beverage, a medicine, a stimulant, or a poison, should be enabled to identify and obtain that specific article and not an imitation or a hybrid. This rests on the same principle that he who bargains for a horse is not bound to accept an animal with long ears and a terrifying bray.

This idea is carried out by the United States government in the provisions of the bottling in bond act passed by Congress in 1897. It makes no mention of the character or formula or wholesomeness of the particular whisky to be bottled, but simply guarantees to the purchaser that the product is a natural whisky, sufficiently matured

and entirely free from any added adulteration. This law demands that the whisky bottled shall be not less than four years old, and this seems generally accepted as the minimum aging period in this country. Dr. H. W. Wiley has on several occasions, either in committee testimony or in the public press, expressed himself as of the opinion that this would seem a proper minimum period of maturation.

I have from personal experience found that some whiskies, however, mature very thoroughly in three years, and from this I believe that the standard set by the bottled in bond statute is entirely reasonable.

The protection afforded consumers in the selection of natural American whisky by this national bottling in bond act was discussed at some length before the last congress of the National Association of State Dairy and Food Departments. That congress endorsed the act as a means by which the public can identify genuine whisky, and in the association's exhibit in the Agricultural building a liberal proportion of space has been devoted to the exploitation of the safeguard afforded by the United States government stamp over the cork of bottled whisky.

Whether the experience of the past century is reliable enough to determine the standard for the future is an open question, but until there is discovered some process to disprove our premises the distiller must contend for the establishing of a standard that shall take cognizance both of the process of manufacture and the process of maturation now pursued in the preparation of whisky for public consumption.

CHAIRMAN SCOVELL: The next speaker is Mr. Warwick M. Hough, the General Counsel of The National Wholesale Liquor Dealers' Association of America, whom I now introduce to you.

#### ADDRESS OF

MR. WARWICK M. HOUGH,  
General Consul of the National Wholesale Liquor  
Dealers' Association of America.

MR. HOUGH: Mr. Chairman, Ladies and Gentlemen: I am not on the regular program, but was pressed into service at the last moment by some of my clients and members of the National Association to say a few words in behalf of blends if any attack was made upon them. I shall not detain you long, because I would have to take quite a while to answer all of the fallacies which have been presented to you in the papers which have been read this evening, and I will content myself with making only a few general observations on the subject.

I was surprised in listening to the remarks of the various speakers to learn that our fathers and our forefathers never had good whiskey, or indeed, whiskey at all, though we have often read of the fine beverages with which they used to re-

gale their friends at the sumptuous banquets they indulged in, because the bottled in bond act was not passed until 1897. I say our fathers, because they lived prior to 1897, and our forefathers, because they lived prior to the time that any internal revenue stamps were affixed to any packages containing distilled spirits. Professor LaBach's statement shows clearly from whom he obtained his whisky education, and if his proposed standard for whisky should ever be adopted, it would clearly exclude bottled in bond whisky, which he wants you to believe is guaranteed pure by the Government.

What was said by Messrs. Taylor and Diehl was to have been expected, because they are primarily interested in having you help them establish commercial value for a trade name over and above the value of their product; but Professor LaBach's knowledge of chemistry should have enabled him to detect the error in many of the statements which have been made to him, and which he has evidently swallowed whole and accepted as facts. The internal revenue laws have been the cause of a great many of these erroneous and fallacious ideas in reference to whiskey. The internal revenue laws were enacted, not to regulate the business of manufacturing and selling distilled spirits: they did not create the business of manufacturing or selling distilled spirits, but as the Supreme Court of the United States said in the license tax cases, they found a business going on and they took hold of it at certain places for the purpose of collecting revenue,—only that and nothing more.

Naturally, incidentally there was a certain amount of regulation, but that was not the primary object nor was it the purpose to change any of the definitions or conditions which existed prior to that time. Consequently, what was whiskey prior to 1868 or 1897 continued to be whiskey after those years. What was rectification prior to the passage of the internal revenue laws continued to be rectification after the passage of those laws, and what was blending or compounding prior to that time continues to be blending or compounding to the present day. It was not the purpose of any of those laws to change the business which was in existence at the time of their passage. I have been surprised, therefore, to learn that new definitions, as the result, no doubt, of the practical application of the internal revenue laws, are given to words which I had supposed and the public no doubt had supposed, were well established and understood. "Rectification" which the encyclopaedias define as "rendering pure" as applied to distillation, is defined here to-night as adulteration. I hear the words "genuine" whiskey and "natural" whiskey, as meaning something which has never been rectified, and as applied to a manufactured article. Now if rectification means making pure, then so-called "natural" whiskey or

"genuine" whiskey must be most impure; and that to a large extent, if I may be permitted to accept temporarily their definitions, is the case, because the whiskey that the gentlemen refer to in such glowing terms is not fit to be drunk at the time it is made, and was, as a writer in one of the papers some time ago said, called years ago by the very uncomplimentary name of "hog wash." That is the whiskey that these gentlemen were talking about prior to the time the United States internal revenue laws were passed. We never had a bonded period until recently, for until the internal revenue laws were amended the tax was required to be paid either at once or within a year, depending upon some variations in the law, consequently at that time there was no storage in bond for the purpose of maturing whiskey, and if this whiskey, which the gentlemen must admit is whiskey, otherwise they are not whiskey distillers,—was put in anything else than that which they now put it into, and not subjected to all the conditions which they now subject it to,—if it were not, I say, it could be kept a million years and would never become fit to drink. I have good authority for the statement I make. In the first place, the distillation and manufacture of whiskey has never been confined to any one process. Whiskey is defined by the Century dictionary as "an ardent spirit, distilled chiefly from corn." Originally it was applied to spirits distilled from malt. In Scotland and Ireland and in the United States distilled spirits are known as rye whiskey, corn whiskey and sometimes wheat whiskey, and in Scotland and Ireland the word was synonymous with the word "uisgebeatha".

The storage in wood has nothing to do with the name. If it has, then the man who makes whiskey is not a whiskey distiller, for his product would then not be entitled to be called whiskey when it was distilled. Prior to the bonded period, and in the early days of this country, especially the early days of the art in Scotland and Ireland, it was made to-day and consumed to-morrow, and they got out of the whiskey the higher alcohols which are considered poisonous and impurities the best way they could. And the mountain dew that is consumed in the mountainous districts of this country to-day, which pays no tax, is whiskey, recognized as whiskey by the law at the time it is made, and it has the poison in it, but it is not pure or refined whiskey. If the whiskey which we hear to-night termed "genuine spirits" or "genuine whiskey" or "natural whiskey" did not have something done to it or added to it to accomplish rectification and refinement, it would never be fit to drink, as we regard a potable whiskey to-day, but would continue raw and unrefined, and I have authority for that from a strong advocate of the advantages of the bottling in bond law, Mr. J. B. Thompson, of Kentucky, who applied to the commissioner of internal revenue, the

present commissioner, for the privilege of sweetening and otherwise refining whiskey in bond because it was not fit to be drunk and did not meet the popular taste unless it was sweetened and mellowed, and the reason he gave for that was that the internal revenue laws did not prohibit it, and secondly, it was a privilege which had been exercised by the distiller long before the imposition of the tax, was necessary to his business success and was not intended to be taken from him by law. That is the very thing which these gentlemen are complaining of the blender about, the very thing they want to do under the double stamp,—and obtain a commercial advantage which follows from a false impression in reference to the double stamp. Mr. Thompson in his brief further said: "Take for instance the right of the distiller to use charred barrels made of white oak." I said awhile ago that if the distiller put his product in metal or in glass it would never improve and he has got to rectify it by some process before it is fit to be consumed. He does partially rectify it and he adds material to it while it remains in bond, and it is rectification in fact, and none the less that the United States internal revenue laws take no notice of it so far as the collection of a rectifier's license is concerned; and if these gentlemen are so concerned about labels telling the truth, let them label every bottled in bond bottle of whiskey "Rectified and bottled in bond" and every blender and compounder in the country will put upon his bottle "Blended or compounded or rectified out of bond," and then each will stand upon its merits before the people of the country who are in the habit of consuming it.

Mr. Thompson says that he is an expert on that subject. I think the gentlemen who spoke on the other side of this question will admit it themselves. The only object and purpose of using white oak charred barrels is to color the whiskey. That is the first artificial thing that they have done to it, the gentlemen who talk about the "genuine," "natural" whiskey. They give it an artificial color, for if it were left in metal, or if it were left in glass it would remain white for a million years. They must give it an artificial color. Whiskey when it is drawn off in the package is clear and without color and will so remain if not colored by the tannin or tannic acid and caramel extracted from the barrels after being drawn off and while stored in the warehouse. The distiller is thus permitted by the rules and regulations to mix his whiskey with tannin or tannic acid and caramel, which are materials foreign to the whiskey when made. Not only this, but he is permitted to apply intense heat, another material, for the purpose of extracting this tannic acid and caramel so far as possible from the barrels to increase or give a deeper color to the whiskey. He is also permitted, after the whiskey is in the warehouse, to apply artificial heat to

create a higher proof than would be natural. Here is a fraud, a material and a substance mixed and added after the whiskey is in the warehouse, and before the tax is paid.

These things do not in the opinion of the department, meaning so far as the revenue law is concerned, constitute the distiller a rectifier. Why not? Not because he has not mixed his whiskey with other material, for he has, but because he had the right to do that long before the passage of the law, and the internal revenue laws did not take that right away from him. That is the genuine, so-called pure whiskey, and it is good provided the rectification and refination in the barrel is thorough. I am not saying anything derogatory to refined whiskey bottled in bond. It is a process of rectification. They are entitled to take advantage of that technicality if they can, but they are not entitled to fool the people into thinking they have not done anything with it when they have, and if they will admit that they have and declare that their product is a rectified product and state the percentage of impurities contained, we are willing for them to say it is bottled in bond and is as old as they are permitted by law to say it is. Now I have heard a gentleman say here to-night that fusel oil is not poisonous. I had always supposed it was. All the authorities I have ever read say so.

MR. PATTERSON: Who said that?

MR. HOUGH: I think Mr. LaBach said it was not so deleterious—to health,—was not poisonous.

MR. LABACH: I didn't say whether it was or not.

MR. HOUGH: I so understood you to say, but I will read Professor Richards, if you don't know it, and I will state first that the difference between neutral spirits, which is used by a blender, and the so-called genuine whisky which the gentlemen refer to, is, that in the process of distilling the neutral spirits by a continuous process called rectification, but which the internal revenue laws take no notice of because it is continuous and therefore does not require the product to have the single stamp, which means that it has been rectified or blended, and they are not required to pay a license as rectifiers, the difference is that the fusel oil is all taken out in the process of manufacture, and in the so-called genuine spirits the fusel oil, which gives it its flavor, is left in. Now they have got to get it out in some way before it is fit to drink, and they attempt to get it out by that process of rectification which is not noticed by the internal revenue laws, but it is rectification, and more than that, it is compounding, because they add caramel and tannic acid and mix different barrels of whisky together. Caramel is not a poison. I do not know whether tannic acid is or not, and that is one

thing the genuine whisky has in it which the so-called adulterated whisky does not have, and I am going to cite Professor Wiley on that.

MR. TAYLOR: How do we know what the so-called adulterated whisky has in it when they can put in anything they want to?

MR. HOUGH: I don't say there is no such thing as adulteration, but I say an impurity in whisky is equally bad whether added or otherwise.

MR. TAYLOR: There is no limit to what you can put into chemically neutral spirits.

MR. HOUGH: And there is no limit to the impurities that may be in bottled in bond whisky. I am not saying there isn't such a thing as adulteration in connection with the manufacture and sale of whisky, but I say it is beneficial and not harmful. I have heard so much in the few hours I have been in this hall in reference to the various kinds of food adulterations that it would be remarkable if that article which is more generally condemned than all the other articles, by at least our prohibitionist friends,—and we had one with us to-night—could not be adulterated. At least, I took it for granted he was a prohibitionist when he said he had cut it all out after having had an unfortunate experience, and if we were to have those experiences often I think everybody would "cut it out."

MR. PATTERSON: You think, then, when a man cuts out drinking whisky, he is a prohibitionist?

MR. HOUGH: When he cuts it out, because that is the meaning of the word prohibition.

MR. PATTERSON: If I understand it, if I don't drink any more I am prohibiting it, and I am a prohibitionist to that extent.

CHAIRMAN SCOVELL: If the gentleman does not wish to answer these questions he need not.

MR. HOUGH: I am perfectly willing to be asked questions if I am given an opportunity to answer them.

MR. HOBBS: How many people does this petition you speak of represent, this Thompson petition—more than one?

MR. HOUGH: That was intended to represent the Kentucky distillers.

MR. HOBBS: I just wanted to know how many it represented.

MR. HOUGH: He said he represented all of them, and I presume he did.

MR. TAYLOR: I think Mr. Thompson has a peculiar opinion of his own, and I know that none of our concerns agree with him on that subject. I cannot recall a single Kentucky distiller that does.

MR. HOUGH: He signs himself here—and I know Mr. Bradley was there helping him, and Mr. Bradley represents a good many distillers in Kentucky. He says that he is there repre-

senting the Kentucky Distilleries and Warehouse Company and also the Kentucky Distillers' Association.

MR. TAYLOR: I just want to make one remark, if I may.

MR. HOUGH: I am perfectly willing for the gentlemen to interrupt the line of my argument if they cannot remember what they want to ask until I get through; if it serves your purpose better, ask the question now.

MR. TAYLOR: The Kentucky Distilleries and Warehouse Association is one association, and the so-called Kentucky Warehouse Association is another entirely and is composed largely of compounders, with very few distillers.

MR. PATTERSON: On this line I would like to be permitted to ask, do you represent all of the blenders in the United States, Mr. Hough?

MR. HOUGH: I think I do, and I think I represent all the distillers except about—well, I won't say what per cent—but I represent practically all the blending interests in the United States and I represent a very large number of distillers who bottle in bond but who are not trying to take any commercial advantage, or work any commercial advantage, through any species of legislation, or misrepresent their product. That is all we have to complain of here.

MR. PATTERSON: All those whom you represent are the genuine; all others are not.

MR. HOUGH: I say it is all genuine. I haven't got to that part of my argument yet.

MR. PATTERSON: I inferred from what you said that the people you represent are only genuine ones.

CHAIRMAN SCOVELL: You must not try to make him answer a question he does not want to answer now.

MR. HOUGH: I will give him permission to ask that. I want to answer all the questions I can. I will answer the question, if you know what it is.

MR. PATTERSON: Now your remark in answer to Mr. Taylor was this, or to my question, that you represented all the blenders in the United States, rectifiers, compounders and all, and also represented some firms bottling in bond who were not trying to defraud the public—

MR. HOUGH: I did not say that.

MR. PATTERSON: Have the reporter read the notes.

MR. HOUGH: I said, who were not trying to obtain an unfair commercial advantage through any species of legislation.

MR. PATTERSON: Yes, through the United States government.

MR. HOUGH: Any species, state or federal. That is what I say.

MR. PATTERSON: Then do you infer that these gentlemen are trying to take an unfair advantage?

MR. HOUGH: That is what we say.

MR. PATTERSON: That is what I wanted to know.

MR. HOUGH: Well, sir, that is what we say.

MR. ALLEN: Will you explain, Mr. Hough, what you mean?

MR. HOUGH: Yes, I will stop my argument and explain what I mean by trying to obtain an unfair advantage. The United States internal revenue laws provide—and I hope I will be allowed to get through without being interrupted—

CHAIRMAN SCOVELL: I will say that the gentleman has the right to refuse to answer these questions if he wishes to.

MR. HOUGH: I want to answer them. There is nothing to conceal on our side. We don't want any unfair commercial advantage. We want to say what our product is. We want to claim our product is just as genuine as any other product and we want to say our product is just as pure, and nine times out of ten is more pure, if I may be permitted to use the term, than the bottled in bond for which so much more is claimed. That is my position. Now, the United States internal revenue laws provide that when whisky is drawn from a receiving cistern into a wooden package a stamp is to be put on called a distillery warehouse stamp. When that is tax paid, which at this time may be at any time within eight years from entry into bond, another stamp is put on which is called the tax paid stamp, and that package is commercially known as a double stamp package. Now, a great deal has been said about the country and the people at large being deceived by blends. The fact is that there is not a word of truth in that, because prior to the bottled in bond act there was no whisky in bottles which went out under government stamps at all,—

MR. ALLEN: Just there, may I ask the gentleman a question?

MR. HOUGH: Go ahead.

MR. ALLEN: You stated that there had not been any attempt on the part of the rectifier—I mean the blender, the interests you represent—to deceive the public.

MR. HOUGH: I never said a word of the kind, and you are putting words in my mouth. You are interrupting my explanation which you asked for and which I am willing to give you, but you must not stop me before I get through, especially to suggest a different idea. I have not said that no blender has ever attempted to deceive the public. A blender may have, and a blender may continue to do so. I am not saying there isn't such a thing as adulteration possible. It has been possible and will continue to be possible. But I am talking about the two general classes, not what men may do, but the two general classes, the so-

called straight whisky and the so-called blended whisky, or compounded whisky, and I want to eliminate every other question except those two, and that is where the issue is drawn. Now, you have asked how they can get this advantage, and I want to tell you if you will let me; but if you won't I will go ahead with my argument. When a package is emptied the government requires a single stamp to be put upon it; that is, the new package into which the product is put, provided it contains as much as five gallons. Thus the public at large who buy as much as five gallons know, because that stamp says "Rectifier's Stamp." Somebody asked Mr. Babbitt if he saw such a thing. I didn't want to interrupt him, but I will say yes, it is on many barrels or packages containing more than five gallons, but not on any package containing less than five gallons.

MR. PATTERSON: May I ask a question right there? Now, my friend, you are here representing the blenders. You say on a barrel or jug or keg there is such a stamp. Do you know that the public does not drink from a barrel?

MR. HOUGH: I do know that some of the public do not drink from a barrel, but I have heard that some do.

MR. PATTERSON: When they don't, how do they know about the stamp?

MR. HOUGH: They may use their own method, but I want to say this, that no legislation—and we are talking now about legislation—can legislate any particular kind of whisky into the stomach of a man who wants whisky; therefore, I don't care what laws you pass, I don't care what regulations you make, I don't care what safeguards you try to throw around it, the man who is willing to go up to a bar and buy his drink has to take his chances.

MR. PATTERSON: What I am trying to advocate is that he should not take his chances at all; he should get what he pays for.

MR. HOUGH: Then you should advocate that he must not drink at all, because I don't care what laws you pass, you cannot prevent a barkeeper from taking a bottled in bond bottle or a bottle bottled out of bond and filling it with anything he wishes. I mean, of course, any different kind of whisky. The drinker usually smells the whisky that is set before him, and if he likes the smell he drinks it; if he don't, he won't.

MR. PATTERSON: I know that, but if you are fair on one proposition you should be on others.

MR. HOUGH: I will try to be on all.

MR. PATTERSON: Why wouldn't you think it would be right to put your ingredients upon the bottle on the bar and let the people look the label in the face and know just what they are drinking?

MR. HOUGH: We are willing to do it if your clients will do the same thing, and put upon the bottle the amount of tannic acid, the amount of caramel and the amount of oils which are in theirs, together with fusel oil; in other words, require the complete analysis to be stated on every bottle.

MR. PATTERSON: I want you to understand I have no clients.

MR. HOUGH: I thought you were advocating certain things.

MR. PATTERSON: I have no clients at all. I am talking absolutely from a business standpoint. I have no clients. I am asking you a fair question and I desire a fair answer, and when you are giving me that kind of an answer you are trying to deprive me of my rights.

MR. SHEPARD: I rise to a question of personal privilege. This interest has asked of us in a courteous manner to be heard and we have granted them a hearing, and I think this gentleman ought to be allowed to go on and present his argument in a logical manner, for the simple reason that he knows that he is talking to men who will be called upon to judge. I think it is discourteous and unfair, and I think any one whom we have asked here for such a purpose as this ought to receive courteous treatment and I suggest that the chairman forbid further interruption.

CHAIRMAN SCOVELL: The chairman has been trying to let the gentleman have his time. A pertinent question may arise now and then, but a person who gets up to ask a question must not try to throw the speaker off the line of his argument or try to make him say what he does not intend to say, but he has the right to ask a question providing he is given the privilege. The chairman has been trying to give the gentleman a chance and I think the audience will allow him to go on.

MR. HOUGH: I am very thankful to the chairman, but at the same time I am anxious to answer any questions that are put in good faith and for the purpose of eliciting the facts.

MR. SHEPARD: I would suggest that you go on and finish your speech.

THE CHAIRMAN: The gentleman is out of order.

MR. HOBBS: I introduced this and I apologize. This is an opportunity I have sought for a long while. I am here seeking information. I am one of the chemists for the state of Ohio and I want to get all the knowledge I can.

CHAIRMAN SCOVELL: I think everybody does.

MR. HOUGH: When I left off before I was interrupted the last time, I think I was making the statement that fusel oil is a poison. I will refer Prof. LaBach and the other chemists to a report

made by Dr. Richards to the internal revenue department on this subject, which was published in the report of the Commissioner of Internal Revenue for 1889. He made some very elaborate experiments with a view of determining the character of this poison and the character of these higher alcohols which by the process of distillation followed by these gentlemen who say that their whiskey is the only genuine whiskey, is left in the alcohol, left in the distilled spirits; simply speaking the two chief ingredients in fusel oil, that is, as I understand, the principle poisons, are amyl alcohol and butyl alcohol. When those two or all of the alcohols which are grouped together under the name fusel oil, are taken out of the spirits, all that remains is pure ethyl alcohol, and you then have the same product which the blender uses with spirits containing the fusel oil or their products, which are sometimes called aromatic ethers, so that you see that is the only difference between the two products when you start out. Now amyl alcohol rotates the plane of polarized light, according to Dr. Pasteur and according to Mr. Richards and all the authorities. In other words, when a man gets blind drunk his sight goes around that way, and that is the effect, not of the ethyl alcohol in the whiskey, but it is the effect of the amyl alcohol. Now the butyl alcohol paralyzes the vaso-motor nerves. It has a direct action on the heart; and the vaso-motor nerves, as you all know probably, are the nerves around the veins and arteries, consequently when they are paralyzed and distended they do not have the power to come back to place, and that is the reason why so many men have rheumatism. It is not because of pure whiskey, but because of the impurities in the whiskey. Now the ethyl alcohol is the only thing which acts accurately from a physiological standpoint upon the system. The tannic acid which is in the whiskey does not do any good. It is a necessary evil, resulting from the effort to give the whiskey an artificial color and refinement. I heard somebody mention "the natural color of whiskey; this is the natural color." The natural color of whiskey is white, and the natural color of whiskey would always be white if it was not artificially colored. It used to be artificially colored by putting it in sherry casks, but it never got the color that it has to-day, the color of whiskey to-day, because they did not char the barrels; the charring of barrels proceeded from an accident. The gentleman who is responsible for the history of this resides in this city, Mr. John D. Hinde, one of the oldest men in the whiskey business, was a Kentucky distiller about fifty years ago and in fact was raised in a distillery, and he is authority for this statement, which was published some time ago and has never been denied or criticised and I accept it therefore as a fact, that in making the barrel they always subjected the staves to heat so as to pull the

staves together at the top; they put them in a form, mold the bottom, and then they have got to press them together at the top, and in putting heat on them they burned some. In those early days all the Kentucky whiskey was sent to Cincinnati, not to be used as Kentucky whiskey because it was not considered fit to be used without being rectified, and they used it to flavor these neutral spirits which these gentlemen now are condemning. When this whiskey in the burned barrels came up it had color and was rejected and it was kept by the distiller for a while and he accidentally discovered it was a little better than any other whiskey he had, and thus they started the process of charring the barrels, because the purifying effect was attributed to the charcoal. Now in charring the barrel the heat draws the xylos or wood sugar to the surface and draws the tannic acid to the surface, and the char has the effect of leaching the alcohol and changing the impurities in it. In other words, crushed charcoal is the article through which they run this whiskey when manufactured in the other way, to get this very product out of it which they cannot keep out in the process of distillation; they keep a good deal of it out but they don't keep it all out because the large part of it goes with the low proof and that is drawn into the stills again and doubled over and they get a good deal of fusel oil out of that, but some of it goes over anyhow and if it stays in the whiskey it is bad and you cannot get it out except by rectifying. Now the only difference between that product and the product of the blender is one of processes. The results are just the same, precisely, with the exception that theirs contains tannic acid, which may or may not be a poison, and Professor LaBach says it is not.

MR. LABACH: No, sir, it is not a poison.

MR. HOUGH: It is not especially advantageous, is it?

MR. LABACH: I don't know whether it is.

MR. HOUGH: And the other does not contain that. Now, here is the statement of Dr. Wiley on that subject before the Manufacturers' Committee of the Senate. I am reading from the official publication of February 4th this year, 1904.

#### DR. WILEY'S STATEMENT BEFORE THE MANUFACTURERS COMMITTEE OF THE U. S. SENATE.

There have been outlined here this morning the different ways in which these spirits are made. The question has come about the occurrence in distilled liquors of other alcohols than ethyl alcohol, which is the ordinary alcohol of commerce. It is undoubtedly true that always when you have a fermentation, ethyl alcohol is not the only alcohol produced. There is produced at the same

time a number of others, and these are grouped together under the common name of fusel oil. The name "fusel oil" is not that of any distinct chemical compound. It never was. There is no such term in chemistry distinctive of a compound which you can identify as you can ethyl alcohol, for instance, or sulphuric acid, but it is a mixture of all these other alcohols which are formed during the ordinary fermentations.

The quantity of these other alcohols varies with the environment and with the nature of the material which is fermented. For instance, if you ferment a potato you get almost exclusively amyl alcohol as the fusel oil produced. If you ferment cereals you get amyl, butyl, and other alcohols of higher series. You do not get in the fermentation of a carbohydrate the lower and first of the series—wood alcohol or methyl alcohol. That is not formed during this fermentation. Grouping these together they make fusel oil.

In the manufacture of pure spirits, pure alcohol velvet spirits, or neutral spirits, there is a system of fractional distillation, a continuous process, by means of which by continued fractionating in different compartments of a still you can separate out these upper alcohols from the ethyl alcohol because they have different boiling points, and thus by continuous fractionating of a successive nature you can finally produce a spirit in which nothing but ethyl alcohol is found, and that is the pure alcohol. The velvet spirits, the neutral spirits, the cologne spirits are all ethyl alcohol. They are made in immense quantities in this country. If you take an unfractionate distillate, as has been stated, you find water, ethyl alcohol, and these other alcohols, known as fusel oil, coming over in the distillate. It is perfectly white. If a mixture of these bodies, these mixed alcohols, is subjected at a proper temperature to the action of natural oxidizing agents, which are present when a proper temperature is secured in a proper package, a change takes place in these alcohols of the fusel-oil series. They become oxidized. They form what are called ethers, aromatic substances which give to a naturally aged whiskey its aroma and mostly its flavor.

Now, the time which is required to produce this oxidization, as I have said, depends upon the environment. You may hasten it or you may retard it. It is helped by motion. Hence the shipment of alcohol across the water relieves the owner of it from the necessity of paying the tax, because he can store it for an indefinite time in a bonded warehouse in Hamburg, and then, when he wants to, he can bring it back into this country. He can not keep it in bond here longer than eight years under our existing laws.

He must pay the tax at the end of eight years, and to avoid paying the tax and to get a longer time for aging, it has been customary to send it out of the country.

It is usually supposed that, with the amount of fusel oil ordinarily produced, about four years is sufficient to convert it mostly into these aromatic ethers. Sometimes it takes longer. You can only tell by examining it just how long it does take; and the manufacture of natural or so-called straight whiskey is conditioned upon the oxidization of these oils to the aromatic substances of which I have spoken.

Again, the question arises whether or not you can imitate this artificially. The compounders and the blenders take this ground: They usually take a pure spirit, as I think practically all of them do, although, so far as paying the tax is concerned, they may, if they want, take a barrel of whiskey right out of bond and use it, as has been said, before it is oxidized. But suppose now, for the sake of the illustration and as is usually the case, they take the pure spirits, which contains no alcohol of this kind—none of the fusel oils. If they should mix that with a little burnt sugar and other things to make it look like whiskey it would not have the flavor and odor of whiskey, and therefore they must use what is produced in the barrel by nature, and they buy that from the chemist. The chemist can make every one of these essential oils and ethers which nature makes herself in aging the whiskey.

Hence there are large manufacturing firms in this country, doing a perfectly legitimate business, making these flavoring extracts, and they are sold to the compounder and to the blender. \* \* \* The blender or the compounder puts these bodies together and makes what the chemist himself by analysis can not distinguish from the natural product. He makes it in an hour or so, perhaps, and very often, I am sorry to say, puts on the bottle "12 years old" when it is made in that way.

The question, it seems to me, so far as concerns this proposed law, is not which of these two bodies is the more deleterious or the less deleterious. I think Mr. Hough has very plainly stated the purpose of the bill in this respect; that is, to prevent deception. If the purchaser knows that the bottle contains a compound and is made in this artificial way, it seems to me that the purpose of the bill is performed, provided, that in the making of it nothing has been added to it which is deleterious to health, and in the sense in which we speak of it. This seems to be accomplished by the provisions of the bill. \* \* \* \* \*

"When whiskey is bottled in bond there is no guarantee in the government's stamp that it is wholesome. It may be as Mr. Hough says, a very unwholesome article.

"The government does not guarantee the *purity*."

And I want to say in this connection that at the annual meeting of the Wholesale Liquor Association, held recently in New York, they passed

a resolution putting themselves on record as favoring the passage of state laws and federal laws which shall prohibit the sale of whiskey which contains any deleterious substances or fusel oil, whether added or otherwise, and the present pure food bill only says "added". Now that does not cover the fusel oil or the poison which may be in this other product as a result of the failure of that process of rectification to eradicate it or transform it into aromatic ethers, and we have taken the position, and we took the position before the committee that we were perfectly willing to have all rectified or all blended or all compounded whiskey marked that way on the bottle, but we wanted the other fellow to do the same thing. That is what I meant by the commercial advantage which they would get if we were compelled to do that while bottled in bond was implied pure when it is not, until the public were educated up to the fact that this article is really the purer and the healthier of the two. Until we educated them up to that we would be at a commercial disadvantage. Now if they will agree to that we are all right, and I will say we would like to have this International Congress pass a resolution, and they ought not to decline to pass such a resolution condemning the sale of any whiskey which contains these poisons, added or otherwise, and we will be satisfied. Now I only read that from this report as proof of the statement that bottled in bond is not guaranteed pure and that when you take the two products that are made in these two ways there is absolutely no difference, provided the barrel charring process is thorough. In other words, you take the best whiskey that can be made, that has been aged and rectified by this process of heating the charred barrel until all the fusel oil has been entirely changed into the aromatic ethers, and analyze it, and what have you got? You have got water, you have got ethyl alcohol, you have got this aromatic ether, you have got a certain percentage of caramel and a certain percentage of tannic acid; roughly speaking, that is all. Now when you analyze this other product, it has precisely those ingredients, except perhaps the tannic acid, and if tannic acid is an advantage there is no objection to putting in the same amount, and then you have got precisely the same article, though the process of making it was different.

Now I don't want to take too much time, but I did want to get before this body that fact, that the difference which it has been pretended existed between the best products produced in these different ways did not in fact exist; that a product rectified is not adulterated any more than you adulterate whiskey when you add water to it, and when you remove the impurities from whiskey you are doing as much of a public service as you can do to the consumer of it; and that if you say that every article, no matter what the process

of manufacture, no matter what the process of purification or rectification, whether it be one that is noticed by the internal revenue laws or not, whether it be one for which you must pay a special tax or not,—that if every one of those things are marked upon the package, then all the products, no matter how produced, will stand upon an equal footing. I stated in the beginning of my remarks that the business of manufacturing and selling distilled spirits existed long prior to the passage of the internal revenue laws, and as Mr. Thompson said in his brief, and as every lawyer has stated and as the Supreme Court of the United States has affirmed, the object of the laws was the collection of the tax and not the regulation of the business and not the determination of how it should be carried on excepting so far as it will safeguard the interest of the government in collecting the tax.

I clipped from a magazine an article which was printed more than a year ago by a gentleman who was interested in the business of selling whiskey even before the internal revenue laws were passed, that is, the present internal revenue laws, which date back to 1868. Prior to that there were laws but there were no stamps required on whiskey and whiskey was permitted to be transported in bond and removed from one place to another for the purpose of mixing it, that is, the whiskies which had these higher alcohols or poisons, as I call them, in them, with whiskies which did not have them in them and therefore reducing the percentage and making something which was palatable. This gentleman, as I say, was in that business at that time, and he spoke as one familiar with the character of that business, and I would like to read from that article, so that this association may possibly get a better idea of how the business was carried on prior to the passage of the internal revenue laws than they may get from anything I have said. This article is written by Mr. T. E. McNamara of Cincinnati, and it was published in Bonfort's Magazine, a trade journal which is neither on one side or the other of this controversy, so far as I know. There are some trade journals which may be on one side or the other, but this is one of the trade journals which I believe to be fair.

#### "THE REFLECTIONS OF A BLENDER."

*By T. E. McNamara.*

Thirty-five, nearly thirty-six years ago, or, to be exact, in the beautiful month of May, 1868, when fate decreed or ambition directed that I should quit selling groceries and dried herring and distribute whiskey instead to the wholesale trade, the whiskey business was one of great simplicity and extensive profits. Cincinnati, St. Louis, Chicago and some interior points in Ohio, Indiana and Illinois produced nine-tenths of the whiskey of commerce in those days as they do

now, though the percentage at present is not perhaps as large. The commercial name of the whiskies then produced was highwines, made from corn and distilled just as any other whiskey is. Over in Kentucky in scattered localities some whiskey was made by what might be called farmer distillers, who made each year little crops running from fifty or a hundred barrels to perhaps a thousand or fifteen hundred. The latter were the exception. Kentucky whiskey was known chiefly as "steam fire copper" and "sour mash," but, generally, it all passed as bourbon whiskey; this name being derived from the county of that name, whether because a particular kind was made there I don't now recall, but it is immaterial. "Bourbon" is now made in every county in Kentucky. Back in my time the whiskey made in Cynthiana, which was one of the principal distilling points in Kentucky then, was called "Harrison County Steam Copper," but, later, even that all changed to bourbon. Another name long since forgotten and not nearly so pretty, viz.: "Hogwash", was applied to the Kentucky product in those days. In reviving the memory of this inelegant but truthful designation, it is probable some delicate soul in the distilling business south of the Ohio may "throw a fit," but it cannot be helped, because it is true, and I have always had a weakness for telling only what is true.

There are people in Kentucky who know these things as well as I do, but they have forgotten them, and have in later years conceived a sort of a fine, airy notion that no whiskey is "pure" whiskey but that made in Kentucky, and some have trimmed this down so that everything else called whiskey, but theirs, even if made in Kentucky, is rotten. Which is not only not so, but is not true. Even the genuine old sour mash that was made "befo' de wah" is no more. All so-called sour mash distilleries in Kentucky now use yeast to hasten fermentation and increase the yield at the expense of quality. I doubt if there is a single exception.

And up about Pittsburg, Pa., also, in those good old days there were some distilleries of the insignificant and unknown order, where they made whiskey from rye grain; not from choice particularly, or because it made better or more valuable whiskey, but because rye was the easiest grain to get in that state and locality then, as corn was the principal cereal raised in Ohio, Kentucky, Indiana and Illinois.

Generally, and so far as the every-day common article of whiskey was concerned, for its common use as a drink, the Ohio highwines, Kentucky hogwash and Pennsylvania Monongahela (as it was called) were pretty nearly on the same level.

Some years before my advent in the business, it was discovered that by rectifying the Ohio and other highwines—that is, leaching them through crushed charcoal and distilling them over (re-

distilling), and by the use of a chambered "column," which a Frenchman invented—they could be made perfectly pure, soft and drinkable, and to the whiskey in this form was given the agreeable name of Cologne spirits. When a cheaper article was desired, the highwines were simply rectified. Both processes were beneficial in the direction of producing a pure, palatable and healthful drink. I recall, too, quite distinctly, that the strong, objectionable taste and peculiar fiery flavor of the Kentucky product, which wasn't fit to drink, had to be modified and improved by mixing it with Cologne spirits, and what little Pennsylvania rye spirit, or Monongahela, found its way to Cincinnati was similarly treated to be made saleable.

Up to the fall of 1868 the whiskey business was of this simple character; there was none of the many distinctions of whiskey that there are now. The products of all the whiskey-making states—Ohio, Illinois, Indiana, Kentucky and Pennsylvania—practically went into the big rectifiers' hands, passed through his mixing tubs, rectifiers and stills, and came out whiskey, and as such was named variously Corn, Bourbon, Rye, Monongahela or whatever trade demanded. And it was all right, too. The public got a good, clean, pure whiskey and paid good prices for it, and everybody was satisfied. "Straight" whiskey, in the sense that the name is now applied, was practically unknown, nor were there any of those toploftical and, in some instances, topheavy airs, so much affected by some of the Kentucky and Pennsylvania distillers about the stuff they turned out.

With the advent of the internal revenue stamp system in October, 1868, and which went into effect November 1 of that year, distinctions began with respect to blended or compound (i. e., mixed) whiskey, and that which was marketed without change, though not especially featured until a year or two later. It was not by any popular selection through taste or by preference for alleged purity that these distinctions arose, but as a growth of the stamping system and revenue regulations which imposed new methods of records and of handling distilled spirits.

Whiskies continued to be made as they had been, and as they are to this day, but as the high-wine whiskies came into the hands of the rectifying houses with the new stamps on them, they had to "dump" them, and cut out or remove the tax-paid stamp before putting them through the process of purification and mixing. When this process was completed, in order to re-barrel the whiskey in its completed and finished condition for the purposes of sale, the contrivance of a "Rectified Stamp" became necessary. These stamps, originally, as well as at the present time, merely indicated that the whiskey in the packages to which they were attached had paid the government tax—all revenue stamps used in the whiskey business are but official certificates of that fact;

the actual methods and processes of forty years before, of preparing the whiskey for its legitimate, commercial and ordinary uses, was not changed in any particular. The mixing of pure rectified and redistilled whiskey with Kentucky Bourbon and Pennsylvania Rye went on as formerly; and it is a fact well known to intelligent whiskey men who know anything of the whiskey business as it was conducted prior to 1869 (and as true to-day as it was then), that the best and finest whiskey in quality and flavor was that which was made by mixing or blending the pure whiskey with the rough and strong-flavored spirits of Kentucky. The bulk of the Kentucky article handled in Cincinnati was bought for the sole purpose of giving and restoring flavor to the perfectly pure rectified and redistilled highwines which these lost in the process of purification, and not in any sense because Kentucky whiskey, either in fact or theory, was considered purer—which is not true now any more than it was then. The little that was sold as it came from the Kentucky distillers' hands amounted to nothing, comparatively.

Along in the early '70s persons in the business interested in the sale of Kentucky whiskey, which was beginning to get burdensome because of larger production and the short one-year bonded period, began to perceive that, for purposes of selling and creating an outside trade and demand, a difference between the whiskey which bore but one stamp—a rectified or wholesale dealer's—and that which bore two—the warehousing and tax-paid stamps—as well as the natural but altogether mistaken prejudice against the term "rectified", might be made available to assist in their disposition. This was the beginning of the business as it now exists, the blender or compounder was brought more sharply to view and the Kentucky distiller, who, prior to that, was chiefly concerned about getting the cash for his whiskey, and never bothered his head about where it went, or how it went, or who drank it—practically, didn't care a damn—began to look wise and important and to puff out his shirt front, as some of them still do. The bonded period was only one year, and such a thing as a distiller storing whiskey to "age" it was practically unknown. So the cue was taken up and "straight" and "two-stamp" whiskey next bloomed into view and was dwelt upon to make it sell—just as nowadays we see the same fanciful kind of rot exploited, not for any great, unchanging truth there is in it, but for the vulgar dollars and cents, about that which has "a little green stamp" over the cork.

It does not take much now, and it took less thirty or so years ago, to start a fad or a fiction about a particular kind or brand of whiskey, actual or alleged. So it was that, back in the early '70s, the first distinction was made—which still more or less exists in the public mind—as to the relative merits of whiskey in a barrel having

a tax paid stamp and one with a rectified or wholesale dealer's stamp. The fact remains, however, that Kentucky makes hog-wash to-day, as it ever did, except in greater quantity, and that its use in great part for its original purposes—that of being mixed with real pure whiskey to produce in the latter a flavor that public taste has become accustomed to, hasn't changed in the slightest particular. Nevertheless, it must be mentioned that there is "straight" whiskey made in Kentucky even now that is not fit to be mixed with anything.

Then we hear so much about the purity that dwells only (in a whiskey sense) in the article made in Kentucky, Pennsylvania or Maryland. No word in the English language applied to what the human kind eat and drink is so prostituted to base uses and selfish purposes as "purity". It is the crowning trump card usually of some distiller who has his own whiskey to sell and who will not hesitate to belittle another distiller's whiskey for that purpose, when the truth is there is no whiskey as impure chemically, or as a potable article for humans, relatively to rectified and redistilled corn whiskey (cologne spirits), as your "pure" Kentucky sour mash bourbon, or your also "pure" this or that Eastern rye; I care not whether it is taken right from the still or eight years after out of an oak package charred on the inside.

I am quite well aware that in so declaring it will cause an eruption of goose pimples on some super-delicate skins, and that some of the bigots (a bigot is one who allows no one else the right of opinion or belief excepting in what he—the bigot—believes or thinks) will rave in despair perhaps for adequate language to reply. But it is true. The finely finished cologne spirits or whiskey of to-day is, as it always was, the purest whiskey in every sense that is made. Public taste is educated in this country in this regard as other public tastes for strong drink are educated elsewhere. Outside of city snobs and cheap dudes aping foreign taste and habit, there is no real demand for Scotch, Irish and other foreign whiskeys in this country, and vice-versa over the waters. The American wants bourbon and rye. He has grown up in their environment and has become used to them, and so we—that is, the whiskey trade—give him bourbon and rye. We give him to-day as we did 30 and 40 and 50 years ago, last year, this year, next year and all the time, these flavors by mixing pure spirits with Kentucky whiskey and Pennsylvania or Maryland rye, or all three or four. We mix them judiciously, carefully, and with the knowledge acquired by experience to produce the best results, and brand them rye or bourbon, according to the predominating flavor used and the taste to be satisfied, and which we have a perfect right to do.

All this is a well known business fact as simple as six-pence and as easy as falling off a log, and

I make the statement just as I would about supplying public demand or taste with calico or other kinds of goods for wear, all made from cotton or mixed with something else, if I was in the dry goods business.

Little by little in the natural evolution of things during the past thirty years or so, the former simple conditions applying to the distilling business have changed into a complex system of antagonistic if not warring interests. There are at the present day so many kinds of distillers with different interests, individual and collective, based on profit and loss as much as upon principle, that a classification is needful to give a clearer idea of the prevailing conditions. The following, therefore, would seem to me to cover the case, subject, of course, to correction, extension or limitation, according to one's views—errors and omissions expected, so to speak:

1. Distillers, such as the Kentucky Distillers and Warehouse Company, which makes regularly each year a supply of bourbon and rye whiskey, according to the demand for its goods and brands. Supplies the wholesale trade. Pursues the even tenor of its way, attending strictly to its own business and granting everybody else the same privilege. Its finer and higher priced brands are used chiefly by the wholesale trade, who buy them for blending.

2. Distillers, few in number, enviable to the last degree, whose entire produce is usually contracted for in advance and ends there. A very considerable, if not the greater part of their product is used for blending.

3. Distillers that might be classed as merchant distillers, who sell their output regularly to the wholesale trade all the year round—notably such firms of high standing as James Levy & Bro. Their products are largely blended, and are constantly recommended to the trade for that purpose.

4. Distillers who contract as much as they can in advance, but who always have some left over to sell, sometimes and generally in competition with their contract sales. It was this kind of business that, not so many years ago, brought trouble and distress to the Kentucky distilling interests, and that finally broke them up. History has a habit of repeating itself, not alone in Kentucky, but elsewhere. The bulk of these whiskies, about some of which a great fuss is made by the distiller, find their way into blending cisterns as the most profitable channel for their distribution.

5. Distillers who make a crop, and look around afterward to find a buyer. There are but few of these left, though prior to 1894 they were both common and numerous. The whiskies produced by this class, if they have any value at all, invariably disappear in blends.

6. Distillers, having plants in Kentucky, who

are also jobbing wholesale liquor dealers, selling only to the retail trade—some times mentioned as dealer-distillers. Their product goes to the retail trade both under the tax paid stamp and as a blend, chiefly in the latter form.

7. Distillers, also with distilleries in Kentucky, who are distributors to the wholesale trade, rectifiers, etc. Their product, besides being used in part by themselves for blending, goes into consumption through the wholesale trade both ways,—“straight” and as blends.

8. Distillers, located chiefly in Ohio, Indiana and Illinois, who besides making bourbon and rye, produce pure whiskey, (that is, cologne spirits), alcohol, gin, etc. This class, which with numbers 7, 9 and 10, constitute fairly two-thirds, if not more, of the entire distilling interests, operate, rectifying and blending houses in conjunction or as branches and distribute to the wholesale trade, who, in turn, many of them, use their product in blending. In this class are such prominent concerns as the Terra Haute Distilling Company, of Terra Haute, Ind.; Corning & Company and others, of Peoria, Illinois; H. H. Schufeldt & Co., Chicago, and some in Cincinnati.

9. Distillers' syndicates of wholesale liquor dealers in different cities who operate jointly distilling plants to make their own supplies of pure whiskey (cologne spirits), alcohol, gin, etc. There are two of these in Indiana, one in Ohio. Their product principally used to blend.

10. Distillers, also syndicates of wholesale liquor dealers, who operate Eastern rye distilleries for their own needs exclusively, and chiefly to blend. There are, if I am not mistaken, two of these in Baltimore, Md., and one in Pennsylvania.

11. Distillers who affect to sell only to the retail trade in bond. This is the iron-clad purchase-clause system.

12. Distillers of everything else, big and little, high and low, from molasses to moonshine.

I don't think any of them have got away. It will be observed that, from the foregoing, the correctness of which I challenge anyone to dispute in fair terms and temperate language, *the chief and natural destination on the way to the end of all distillery products is the blending cistern.*

For a stranger, though, to pick up and read some of our trade journals, and from what is published—usually in some individual interest—in the daily press from time to time about the whiskey business, he would at once conclude that it consisted of but two classes; one that dealt only in “pure” or “honest” whiskey, and all the others in “impure,” or, as a Kentucky gentleman and distiller somewhat acrimoniously and with not a nice conception of terms, describes as “bastard” whiskey.

It is this sort of thing that has superinduced these calm reflections upon some recent discussion

going on about bottling in bond. The gentleman who used the ungentlemanly epithet applied it primarily, it would seem, to whiskies bottled by wholesale dealers, without the "little green stamp," though, doubtless, he would hesitate to apply it equally to a fine blended whiskey of the highest character if his personal business purposes and pecuniary emolument therefrom would be served thereby.

But such sweeping denunciations fool nobody in the trade. Scarcely an intelligent merchant in the whiskey business but knows the unsalable qualities of the bottled in bond article in support of which the gentleman exploded the unsavory expletive.

The equally intelligent public, after nearly ten years of trial, doesn't seem to want it. A first class blend is infinitely better and a more palatable and healthful article to drink or to be prescribed by a physician than the rough, fiery and flat bottled in bond whiskey, and I have seen and tasted nearly all of them, including that of the gentleman of the intemperate expression. I will even go further and say that I will wager any reasonable sum that I can convince a committee or jury of unprejudiced men capable of judging things by merit that a blended whiskey which I will make in their presence—using Indiana pure whiskey, i. e., cologne spirits, with some Kentucky, Pennsylvania or Maryland whiskey as flavors—a blend that I would sell to the wholesale trade for, say, \$1.75 (95 proof)—is superior in all respects to anything bottled under the present law and regulations.

And lest I should be misunderstood, let me add that from the beginning I favored and supported bottling in bond legislation. I have not written a line in this article that is dictated by any kind of hostility to the "little green stamp" or the law from which it sprang. The present law is all right so far as it goes and for what it was intended to be, not as supplying distillers or drinkers with the "Government's certificate of purity," which is a cheeky, unwarranted assumption, because it isn't anything of the kind, but an outlet, in part, for bonded whiskey to the trade. When gentlemen arise, however, for purely selfish purposes as well as purely business reasons, from which they expect to profit in pocket in the common mercenary way, regardless of all else, and would pretend to have us believe that it is the *only* whiskey, and all that kind of tommy-rot, I am constrained to register a distinct, powerful and solemn kick.

It will be far better, and speed the day, when kettles in the whiskey business cease calling the pots in the same line black.

There are abuses, of course, in the whiskey business, as there are in every other business, the principal difference being that we never see nor hear merchants in other lines resorting to almost

downright blackguardism about other people's wares or other people's views. I do not stand as a defender or apologist for those who practice the abuses we know of in any sense; they deserve exposure and punishment and frequently get both, but I think they are relatively few to the great body of honorable men in the business, and so I am disinclined to let pass unnoticed the vaporings of some others, still fewer, who set up an exclusive doctrine of "I am holier than thou" merely to create a market for their goods.

T. E. McNAMARA.

On the Wabash, Terre Haute, Ind., Dec. 31, 1903.

MR. HOUGH: The main point I want to emphasize on the Congress is this: the mere fact that a whiskey is so-called straight whiskey does not prove it is pure, does not prove it is of high grade, does not prove it is anything, and notwithstanding what has been said by the gentlemen here to-night about the government stamp upon it, I say it tells everything except that it is pure. It tells when it was made, it tells whether it is four years old or more, it tells the proof upon it, and that is all, because you can take the purest whiskey that is distilled and bottle it under the little green stamp, and you can take the worst whiskey that is distilled and do the same thing. Therefore all that the little green stamp says is, not that it is fit to drink, not that it is of a high grade, but that this was made four years ago. and the green stamp is there for the purpose of saying that the tax has been paid upon it. The purpose of the internal revenue law is not to regulate the sale of that whiskey. Therefore the mere fact that it is under the double stamp proves nothing, neither does the fact that it is under the single stamp, or that it has been compounded or rectified prove anything, because there are high grade compounds and high grade blends and there are poor compounds and poor blends. The only difference is this; there are a great many people in the trade who do not know about how the things are made and why things are as they are, and who buy a whiskey which has the two stamps on it thinking that it means something more than that the tax has been paid, whereas those who buy whiskey with the single stamp on it, buy it usually upon its quality, upon its flavor, and judge by that and not by the stamp. Therefore you can find the high priced blends and low priced straight whiskey. You can find high priced straight whiskey and low priced blends. The distinctions which the gentlemen are endeavoring to impress upon you do not exist in fact, and so long as they do not exist in fact we do not want the product manufactured by our people condemned, either by a resolution of this Congress or by any legislation, state or national. There is no such thing as a natural whiskey, as certain gentlemen would have you believe, but it

is all process whiskey because it takes a process to make it—that is artificial.

MR. PATTERSON: Mr. Chairman, I desire to ask a question.

CHAIRMAN SCOVELL: Of course the gentleman still has the floor, so don't make an argument that will take him off the floor.

MR. PATTERSON: He did not answer my question as I asked it. Now, I desire to put this question to him: You stated, Mr. Hough, that you were the attorney for all the blenders as well as some of the bonded goods people, not the kind of bonded goods that these gentlemen represented, but a better material.

MR. HOUGH: I beg your pardon. I did not mean to say that.

MR. PATTERSON: I will leave that to the record.

MR. HOUGH: If the record says that, I wish to correct it now: I say I represent the principal blenders. I don't say all, because there may be a few that I do not. I represent the National Wholesale Liquor Dealers' Association of America, a corporation and an organization which comprises the principal blenders and the principal distillers outside of the trust, and a few in Kentucky that make a specialty of bottled in bond goods.

MR. PATTERSON: Of course, that statement is all right.

MR. HOUGH: I meant that to be the statement I made in the beginning, and I believe that it is.

MR. ALLEN: I understood you to say in your argument, and I ask you this because we want to get at the facts: if the bottled in bond whiskies are not good, we want to know it.

MR. HOUGH: I don't say all are not.

MR. ALLEN: I ask you this question to get at the facts. This Congress is trying to get at this point: how can it eliminate the adulteration which does exist in whisky in some of the blends or some of the preparations made either by the wholesale distillery after it gets a good blend, or after the goods are bottled in bond whisky? What we are trying to get at is how we can eliminate a cheap adulteration which is added to be sold in a cheap saloon, and another question is, how can we get whiskies labeled so as to tell their true age? Now, in your argument you draw a comparison between two forms of whisky, one a bottled in bond whisky which you say is rectified, and the other you rectify by the process of continuous distillation. Now, you draw a comparison between those two. Isn't it a fact that you add something to the product of your rectification to give age and give color and give taste? If you do, we are trying to get at what it is that you employ. If it is deleterious to health we want to know it; if it is not, we want to know it. Then when we get

to that point, if it is deleterious to health, we want you to stop it; if it is not deleterious to health, we are going to let you keep on, and solve it that way. On the other hand, we want you to label your goods; if your goods are one year old, we want you to label them that way or not label them at all, and we want the other man who rectifies by the barrel process to put that identification on it and do the same thing. What we want to get at then is the impurities which exist, which you both admit, and to get both those products labeled so that the consumer will know what they are. Now, isn't there a common ground at which you and the other gentlemen can arrive, and on which we can have a good blend and a good bottled in bond whisky, on which basis each will be labeled so that the public can distinguish between them?

MR. HOUGH: You have asked so many questions I don't know whether I can recollect all of them or not, and in connection with your questions you have made a great many statements. You want to know if there is any way, or any kind of law which can be passed which will protect the public against deceptions and impurities in the sale of blended whiskies, as well as so-called straight whiskies?

MR. ALLEN: Yes.

MR. HOUGH: You can do that by passing state and federal laws requiring blended whisky to be so marked, compounded, if you please. There is no objection to that; it is only fanciful, and a law providing that no whisky shall be sold which contains any poisonous or deleterious substance whatever, whether added or otherwise, because if you are going to recognize a process which does not take the poisons out in the beginning, you ought to insist that they shall be taken out by some process before they are put upon the market; otherwise you are recommending to the public an article which contains that which all the authorities that I have been able to discover say is a rank poison; it is that which produces all the deleterious effects, the chief deleterious effects from whisky drinking, and if you can eradicate and prevent the sale of whisky which contains fusel oil, you will diminish the evil effects of whisky drinking, for as I stated a while ago—

MR. ALLEN: Doesn't the little green stamp guarantee the age, the location of the distillery, and guarantee the proof?

MR. HOUGH: It does. It does everything but guarantee the purity and the quality.

MR. ALLEN: Isn't it a fact that the public have always demanded, for some reason, the age of the whisky?

MR. HOUGH: Only as indicating a certain degree of purity, but they can't get it by buying it bottled in bond. If they don't care how

much impurities it contains they can buy it bottled in bond. Of course, you are not insisting on having me or any other man who wants to buy bottled whisky know where it comes from, if they don't want to know, but it isn't right I should fool somebody who does want to know.

MR. ALLEN: But if you do want to know the location isn't it right you should drink whisky that you do know about?

MR. HOUGH: If you asked me where the whisky was made I ought to tell you.

MR. ALLEN: Isn't it a fact that those two questions are the ones the customer asks when he asks for a drink—"How old is it?" and "Where does it come from?"

MR. HOUGH: I think not. I think every drinker knows where a whisky is made and how old it is before it goes over the counter.

MR. TAYLOR: I would like to ask one question. You made the statement that the bottled in bond stamp does not specifically guarantee the purity.

MR. HOUGH: No, sir, it does not.

MR. TAYLOR: I want to call your attention to one thing. You read a statement of Dr. Wiley where he says it takes about four years to oxidize the fusel oils into aromatic essences and flavors, and you also stated that whisky was rectified and flavored by age.

MR. HOUGH: I stated that as a fact myself.

MR. TAYLOR: Now I want to ask you this question: If the bottling in bond law does not require that that whisky shall be held four years and aged four years before it is permitted to be bottled in bond and to that extent cover the proposition that is at issue now?

MR. HOUGH: No, sir, for the reason that the bottling in bond law does not permit whisky to be bottled in bond in that way until the time has passed when you could under the old law apply for a re-gauge. That is the way it is expressed in the law; that means four years. The practical effect is you cannot bottle whisky in bond until it is four years old.

MR. TAYLOR: That is what I mean.

MR. HOUGH: But it does not directly or indirectly indicate the quality or the purity, because I could bottle in bond pure neutral spirits if I wanted to, or spirits which had had none of the fusel oil removed and which would therefore be nothing more than highwines.

MR. TAYLOR: But you would have them in their original integrity and they would go on the market just as they were and not manipulated at all and the public could choose whether they wanted them or not, because they would know all the facts about it.

MR. HOUGH: You are mistaken there. It does not indicate that it has not had anything added to it because it has had added to it every-

thing which is in the whisky by analysis which was not in there by analysis at the time it was made, and the analyses show it has increased in total solids in the eight years as high as .48 when it has started with .001, when it has a color it has never had before and which it had to get from something outside of itself, and of that color at least 50 per cent is caramel, which is the same thing used to give the color to blends and the color has nothing to do with the purity. Total solids cover color and flavor artificially added.

MR. TAYLOR: If it has nothing to do with it, may I ask you why you take white neutral spirits and fail to hand it to the customer in its own white color and in its own chemical purity, and go to the trouble of coloring it and putting in these derivatives of caramel and alcohol that you are decrying and put it on the market under the name of whisky?

MR. HOUGH: Because it is whisky. It was whisky before these things were put in, and it remains whisky, and the blender does it for the same reason that you artificially color yours and for the same reason that the farmer is so apt to color his butter. There is no sense in it except that the public has gotten used to colored whisky.

MR. TAYLOR: Does he not do that because of the fact that the way that whisky is aged requires an investment of capital, requires the cost of holding it, paying interest on the original investment, requires the payment of state and county taxes as they accumulate, requires the payment of insurance, requires the payment of warehouse labor to protect it, stands a risk of leakage and loss by evaporation, and although you say those two methods of rectification are identical, don't you recognize the fact that the man who has the costly product after he has held it is at an immense disadvantage if you are going to take neutral spirits fresh from the still and add the color which he has obtained by storage for eight years? You go to the trouble of putting them in there and running them in the back door one night and out of the front door the next morning under brands and trademarks indicating it is the same brand of whisky that the distiller has aged in bond. And don't you know with your acquaintance with the internal revenue laws—and I know you have an intimate acquaintance with them—that there is not a rectifier in the United States to-day that sends out a barrel of single stamp whisky with the word "rectified" on the original rectifier's stamp which he did put on there when he rectified it? But don't you know that under a provision of the regulations he makes a constructive change and affixes a stamp known as the wholesale liquor dealers' stamp, which permits that work, and he sends

out that barrel under the wholesale liquor dealers' stamp, without the word "rectified" on it?

MR. HOUGH: Yes, and no; you mix too many statements to answer properly.

MR. TAYLOR: You stated a while ago that he sent it out with the word "rectified" on it.

MR. HOUGH: I say they don't all do it; they very frequently do it. But I say this, that everybody who knows anything about the whisky business knows—and of course the customer who takes a drink don't see the barrel and don't pay any attention to it; he doesn't go into a saloon and turn the stamps around to see if it is drawn out of this barrel or that barrel and find out whether it is double stamp or rectifier's stamp or wholesale stamp—but the people who deal in that kind of barrels know that a single stamp indicates it has been rectified or compounded; it is accepted as such by the trade.

MR. TAYLOR: Then why do they go to the trouble of changing the stamp?

MR. HOUGH: Why do you go to the trouble of coloring your whisky?

MR. TAYLOR: That is not a similar question by any means.

MR. HOUGH: Yes it is; the natural color of whisky is white.

MR. TAYLOR: I understand, but why do you go to the trouble of changing your stamp, which tells the truth, when saloonkeepers know just exactly what it is? What is the object of that?

MR. HOUGH: Because they ask it that way. That is my experience.

MR. TAYLOR: They want to deceive somebody.

MR. HOUGH: In other words, the public get exactly what they want, and they know about it, and it is mighty hard for you to fool them. Now, your first question, which I did not get a chance to answer. You spoke of the increased cost of carrying these goods in a warehouse. You don't mean to say the distiller pays those costs, do you?

MR. TAYLOR: Yes, I do.

MR. HOUGH: Don't you know that in 99 per cent of the cases it is paid by these very fellows that you are talking about, the wholesale dealers?

MR. TAYLOR: Isn't it the cost of that article which makes it a difficult economic proposition and which impairs it in competition with something you can make over-night, and no matter whose pocket it comes out of, isn't it a fact that it is placed there under economic difficulties? You can do what you please during that eight years.

MR. HOUGH: We both do the same; that is the proposition. You make your whisky, Mr. Taylor, and you sell that whisky to this wholesaler or blender as of the day that it is made; you carry it for him in your warehouse and you

charge him storage and insurance. Who are you charging? The very blender that you are talking about and criticizing now. He keeps it in your warehouse and he pays you the storage and the government tax. It is his money that does it, not your money, so that if you are talking about the man who invests the money, it is the very fellow you are trying to condemn. You try to sell it as long as it is in there; every distiller does, and what you can't sell you bottle in bond and try to work off that way.

MR. TAYLOR: Suppose a leak springs in the barrel and the whisky runs out after I put it in there: who loses it, at any time during the eight years?

MR. HOUGH: It depends upon whether you have guaranteed it; in a majority of cases it is the loss of the wholesaler, and I have had a hundred cases where they tried to make the distiller stand that loss and he would not do it.

MR. PATTERSON: You say they buy their whisky from the bonded men; who do you mean?

MR. HOUGH: The distiller.

MR. PATTERSON: Yes, and you blending fellows pay the money to them. Now, on that point, what do you do with the whisky you buy? Do you sell it on the market the same as you buy it?

MR. HOUGH: They sometimes sell it, sometimes blend it, when it would be an imposition on the public to sell it straight. The majority of the distillers in the United States sell their product to the blender and don't care anything about the brand, and therefore expect it to be blended and sold under the brand of the wholesaler. The distillers who care a great deal about the brands want the whisky sold under their own brands, but the wholesalers woke up one day to the fact that they were building up trade for the distillers and they said, "We will have none of your brands; we will buy the whisky and blend it or compound it and sell it under our own brands, and sell it to people who believe that when we tell them this is a good thing and this is pure, will accept our statements, and we will not sell it to anybody else. We are not selling that under the faith of a stamp or the faith of a brand, but under our reputation as dealers in telling the man he is getting what he is paying for."

MR. PATTERSON: Don't I understand that when you buy four gallons of bonded goods you put in about four gallons of water to blend it, as you call it?

MR. HOUGH: Not water.

MR. PATTERSON: Whatever you call it. If you are the fellows who pay all this money out for the eight years, why don't you say what you do with the whisky?

MR. HOUGH: It doesn't make any difference what we do with it, we sell it either straight or blended; that is, mixed with other spirits to improve it.

MR. PATTERSON: I am talking from the consumer's standpoint.

MR. HOUGH: If the expense of carrying it in bond was paid by me, the distiller cannot claim credit for it.

MR. PATTERSON: But I was made sick by drinking whisky and couldn't have been made sick by drinking genuine whisky.

MR. HOUGH: It couldn't have been blended whisky.

MR. PATTERSON: It wasn't 100 proof, was it?

MR. HOUGH: It might have been more, and it was probably fusel oil that made you sick.

MR. DIEHL: I was going to ask if you have any objection, or your interests have any objection to defining the difference or making the distinction between the product which is made at and matured at the distillery, and the other products? That is what I want to get at. You say they arrive at practically the same thing by two different processes. Now, it is to recognize those processes that we are endeavoring to get a resolution before this body.

MR. HOUGH: There is no objection whatever, but isn't that already distinguished as to the packages which contain more than five gallons?

MR. DIEHL: No, it is not.

MR. HOUGH: Why not?

MR. DIEHL: Because when you take and rectify whisky and put it into a single stamp package it is not distinguished as to whether it is compounded or whether it is straight whisky, because you can put either rectified or straight whisky in that package. You can put a stamp on a forty-gallon barrel and take out a ten-gallon keg and a twenty-five-gallon half-barrel and it is straight whisky, and you can blend the five gallons in the barrel and the dealer can't tell the difference between them. And not only that, as a matter of practice, the dealer goes to the purchaser and says, "I will sell you a half-barrel of this same whisky, straight whisky," and he is at liberty in the meantime to change that to rectified whisky if it is his disposition so to do. Now, there is a question about the barrel. Mr. Hough stated that whisky was put in charred barrels to give it a color. That is not strictly true. It is put in barrels for the reason that a metal receptacle is impracticable, because it will take the taste from it.

MR. HOUGH: Don't you know that they do put spirits in metal receptacles when they don't want to lose by evaporation?

MR. DIEHL: I don't know anything about

that. When they put it in iron it will turn black.

MR. HOUGH: Yes, they do do it.

MR. DIEHL: And when you put it in brass it will take the taste of the brass.

MR. HOUGH: You must be mistaken, because they do do it. Whenever they don't want the spirits to evaporate they put them in metal cans and then put the cans in barrels. They do that in all the export business and it doesn't affect the quality at all.

MR. DIEHL: The charcoal in the barrel is also put there for the purpose of preventing the whisky from taking the taste of the wood.

MR. HOBBS: How large a proportion of this compounding business in the United States do you represent?

MR. HOUGH: Well, I said a while ago, I was going to speculate on the interest; these gentlemen probably know as much as I know—probably 95 per cent of the business in the United States.

MR. HOBBS: And do you know the workings of this body well enough to make the statement to us as commissioners and chemists here that you always use these high-proof spirits in these compounds?

MR. HOUGH: Neutral spirits, perfectly pure.

MR. HOBBS: And is that the majority of the stuff that comes out upon the market in cheap whiskies?

MR. HOUGH: The cheap whiskies are usually made by reducing the proof; in other words, you put more water to it. All the cheap whiskies that are sold around the levee are down to about 30 proof, and in order to give the flavor that a good many people want it is a common practice on the part of the bartenders themselves to put in some of this rank fusel oil so it will burn the throat as it goes down, but that is not the rank and file of the business. The rank and file of the business make a pure article, and it is a pure article where you take an aged whisky.

MR. HOBBS: I am simply trying to get at this question to satisfy myself if they are not used in the great bulk of the trade ethyl alcohols.

MR. HOUGH: Yes, sir, the alcohol of whisky is ethyl.

MR. HOBBS: We have a lot of it done, and they use the cheapest kind of alcohol.

MR. HOUGH: What do you call the cheapest kind of alcohol?

MR. HOBBS: Alcohol that you have got to distill two or three times to get the noxious stuff out.

MR. HOUGH: Then it is neutral spirits. That is an exception.

MR. HOBBS: That is what they use in Ohio.

MR. TAYLOR: Under the internal revenue

laws cannot the rectifier or blender put anything into it that he wants to, providing it does not affect the proof? Can't he use such alcohols as Mr. Hobbs has mentioned or any other alcohols?

MR. HOUGH: He could put methyl alcohols or wood alcohols in, or mud, but he is not a fool.

MR. TAYLOR: And is there any assurance to the consumer that he does not do it?

MR. HOUGH: We say we want a law passed which punishes and prohibits the putting in of anything poisonous or deleterious to health.

MR. HOBBS: That is all taken care of in the pure food laws, isn't it?

MR. HOUGH: No, sir.

MR. HOBBS: We have pure food legislation to cover the definition of whisky without any question.

MR. HOUGH: You mean in Ohio?

MR. HOBBS: Yes.

MR. HOUGH: I had reference to the country generally.

MR. BABBITT: I want to ask Mr. Hough one question: If the sale of whisky was confined to bottled in bond goods, which would require it to be four years old, how long would these whisky men be in business? I think there are about nine million gallons in Kentucky that is over four years old, and we use twenty-six million gallons of whisky a year, and no more could be obtained for another year.

MR. HOUGH: It is not necessary for me to answer that.

MR. TAYLOR: Does the consumer care how long the whisky man is going to be in business when he is trying to get certain things and the whisky man is trying not to give them to him? Don't that very statement show you that there is a necessity of adulteration on his part, and that is to fool the consumer?

MR. HOUGH: No, I don't think that follows.

MR. TAYLOR: One more question: Can you put methyl alcohol in whisky without the green stamp, under the law?

MR. HOUGH: No.

Congress adjourned to 9:30 a. m., October 1, 1904.

#### SATURDAY, OCTOBER 1, 1904.

Congress and Convention met in executive session at 9:30 o'clock a. m.

CHAIRMAN BAILEY: Is the Committee on Antiseptics and Color ready to report?

DR. WILEY: The committee is ready to report, Mr. President. Shall I read the report or hand it in and have it referred to the General Resolutions Committee?

CHAIRMAN BAILEY: I think you had better read it.

The report of the committee was then read by Dr. Wiley, and is as follows:

Whereas, certain food products have distinct natural colors, which are regarded as indices of excellence and purity, therefore be it resolved by this Congress,

1. That we deprecate the artificial coloring of food products to imitate the natural, distinctive tints referred to above, and urge upon food manufacturers the propriety of discontinuing the use of pigments of any kind for the purpose above mentioned.

2. That in the manufacture of food products which are mixtures or compounds having no distinctive colors and which are used as candies, confections, ices, delicacies and desserts, and which are expected by the consumer to be colored or tinted, only such colors, preferably of vegetable origin, shall be used, which are determined by acknowledged authorities to be harmless; and the use of aniline, other coal tar dyes, mineral colors and synthetic colors of all kinds is regrettable.

3. Whereas, There are available unobjectionable methods of preserving foods, for example, limited cold storage, dessication, sterilization and the use of the long employed and condimental preserving agents, such as salt, sugar, vinegar and wood smoke; therefore, be it resolved,

1. That this Congress does not approve of the use of preservatives or antiseptics in the preservation of foods other than those above named.

2. That since a preservative or antiseptic other than these above named to be effective, must destroy or paralyze all fermentative organisms, they induce a condition which must be more or less unfavorable to digestion, and they are therefore to this extent hurtful.

- 3 That the use of preservatives and antiseptics other than those above named in mineral quantities is not a justification of their employment, since even in mineral quantities, where their use is long continued, they may become harmful.

4. That the use of preservatives and antiseptics other than those mentioned above, must be, previous to their use, justified by the manufacturer, and no citizen should be required to ascertain for himself whether or not the food we consume contains an added preservative other than those mentioned above, and therefore when any other preservative or antiseptic is added to food, the name and amount thereof should plainly appear upon the label.

H. W. Wiley,

J. H. Shepard,

V. L. Price,

E. F. Ladd,

Julius Hortvet,

William Berkeley,

Richard Fischer.

DR. WILEY: Mr. Sebastian Mueller, a member of the committee, approved in part the re-

port, but could not sign it as a whole. I will read the minority report.

The minority report of the committee was then read by Dr. Wiley, and is as follows:

Resolved, That all harmful colors and all colors concerning which there is no doubt as to their harmful qualities be prohibited in foods, and that the use of all other colors in foods be made known to the consumer.

That the use of all antiseptics be restricted to extreme conditions necessitating their use, and whenever used the amount and name of antiseptic be made known to the consumer.

Sebastian Mueller.

CHAIRMAN BAILEY: You have heard the reading of this report. What is the pleasure of the convention?

On motion of Mr. Emery, duly seconded, the report was referred to the General Resolutions Committee.

The Committee on Legislation submitted the following resolution, which was read by Mr. Emery:

Resolved, That the National Association of State Dairy and Food Departments, assembled in its eighth annual session, September 26 to October 1, 1904, at Congress Hall on the Louisiana Purchase Exposition Grounds at St. Louis, Mo., hereby records its endorsement of the Hepburn Pure Food Bill, H. R. 6,295, as passed January 19, 1904, by the United States House of Representatives, and most urgently requests the passage of the same by the United States Senate.

(Signed.) J. Q. Emery,  
A. H. Jones,  
Horace Ankeney,  
A. W. Farlinger,  
Albert E. Leach,  
J. A. Bliss.

On motion, duly seconded and carried, the resolution was referred to the General Resolutions Committee.

The Committee on Food Standards submitted the following report, which was read by Mr. Scovell:

Whereas, The Association of State Dairy and Food Departments recommended by resolution at St. Paul last year that the standards being formulated by the committee appointed by the United States Secretary of Agriculture be recommended for adoption by the several departments, be it

Resolved, That the commissioners and state analysts be urged to co-operate with the committee appointed by the Secretary of Agriculture in formulating these standards by furnishing all suggestions possible for the formation of an authoritative set of standards. And be it further

Resolved, That the different states and governments of the world be asked to co-operate in bringing about international uniformity of standards for the purity and quality of food substances.

(Signed.) M. A. Scovell,  
C. P. Sherwood,  
H. E. Barnard,  
R. G. Evans,  
H. W. Wiley.

CHAIRMAN BAILEY: If there is no objection the resolution will be referred to the General Resolutions Committee.

Is the Committee on Alcoholic Beverages ready to report?

MR. NOBLE: Prof. Shepard will report for the committee.

PROF. SHEPARD: The Committee on Alcoholic Beverages offers the following resolution:

Resolved, That this Congress recommends the establishment of standards for the purity and quality of alcoholic beverages and urges the committee appointed by the Secretary of Agriculture to take steps toward the formation of these standards.

That all whiskies be labeled to show the true age, and the place and process of manufacture, and

Whereas, the unbroken United States Bottling in Bond stamp guarantees the true age, the place and process of manufacture and the proof of whiskeys bottled in bond and is an absolute guarantee that the product has been ripened in wood for the length of time stated on the label, therefore, be it

Resolved, That this Congress endorses the United States Bottling in Bond Act as a means whereby the purchaser can identify the age, proof, place and process of manufacture of whiskeys ripened or aged in wood."

J. B. Noble,  
J. H. Shepard,  
M. A. Scovell,  
A. H. Jones,  
H. W. Wiley,  
J. O. La Bach,  
H. E. Barnard.

The report of the committee was referred to the General Resolutions Committee.

CHAIRMAN BAILEY: Is the Committee to report Resolutions on the Baking Powder Controversy ready to report?

MR. HOBBS: On behalf of Mr. Ankeney, I have referred that matter to the General Resolutions Committee, not knowing that we were to take this method of procedure, and it is in their hands.

CHAIRMAN BAILEY: Are there any other resolutions?

MR. EMERY: I have in my hands a copy of a resolution submitted to this association by the National Bee Keepers' Association, and inasmuch as I have not been able since this was put into my hands to get the committee together, I suggest that this be referred to the General Committee on Resolutions. There are no explanations made, and I do not know who handed it to me, but I find it in my possession.

The resolution was referred to the General Resolutions Committee.

MR. EMERY: A resolution on legislation has been placed in my hands on which the committee has not been able to act. I will read this resolution and ask that it be referred:

**Resolved, That the Secretary of Agriculture be asked to recommend to Congress the printing by his department of the annual conventions of the National Association of State Dairy and Food Departments, and that the members of this association be urged to bring the importance of such recommendation to the attention of their Representatives and Senators.**

Referred to General Resolutions Committee.

PROF. LEACH: You have not called for the report of the Committee on Drug Adulteration, but that has been handed in to the Chairman of the General Resolutions Committee.

Mr. Rossati, in presenting the report of the Committee on Future International Conference, said:

From the able addresses that have been delivered to this congress, as well as from the wise discussions which have followed, unanimous has been the consensus of opinion that uniformity of food laws, food standards and methods of analysis between nations should be no longer delayed in order to facilitate commercial relations between the same under proper guarantee of purity for the products which are the object of international exchange.

Since it is evident that every civilized country has recognized by enactment of food laws the necessity of protecting public health and morals, as well as legitimate economic interests, it is to be expected that they should be equally in favor of harmonizing these laws with regard to their commercial intercourse, and disposed to come to an agreement that should mold in one common code the requirements as to purity and honest labeling of food products demanded by the interests of consumers and of legitimate trade. The necessity of an exchange of intelligence and, I sincerely hope, consequent agreement between the nations in this matter is becoming every day more apparent, in order to obviate unnecessary delays and inconvenience in the exchange of food products.

In other words, what is desired is that nations,

also in the policing of commerce, should be guided by the moral principle in which we firmly believe, viz., not to do to others what we don't want others to do to ourselves.

If a country forbids, for instance, the use of a given substance in the preparation and sale of food products intended for home consumption, because such substance is deemed injurious or otherwise disqualified, we think that she should forbid it also when said products are intended for exportation to foreign countries, on the principle that what is not good for self is not good for others.

Dr. Wiley has ably defined the policy of the United States in the requirements of purity and honest labeling of food products intended for importation in this country, which must come up to the standard of purity required for home consumption and for exportation from the United States; and the same adoption of policy is desired from other countries. I may state that Italy, like, I believe, the other foreign countries which are represented in this congress, does not allow the exportation of food products deemed unfit for consumption at home.

Let us hope, therefore, that our recommendations, the justice of which is too manifest to need demonstration, will receive favorable attention and become at no distant date an accomplished fact, to the realization of which this congress will have the satisfaction of having contributed in no small degree.

I profit of the opportunity for thanking you once again of the highly appreciated honor you have done me in inviting me to attend this convention, of which I have followed the labors with the greatest interest, and from which I carry away new ideas and the most pleasant impression, together with the desire of meeting you again in the prosecution of our efforts for uniform pure food laws, whereby to secure the health of the people, efficient protection for the interests of honest producers and a higher standard of morality.

Mr. Scovell: I move the adoption of the report, so that this committee can be appointed.

The motion was duly seconded and carried, and the Chairman appointed the following committee:

Commissioner General Jules Carlier, Belgium, chairman.

Commissioner General G. von Stibral, Austria.

Chevalier G. Rossati, Italy.

Dr. Graco Cuoto, Brazil.

Dr. Salvador Cordova, Honduras.

Dr. H. W. Wiley, U. S. Department of Agriculture.

Secy. R. M. Allen, National Association State Dairy & Food Departments.

MR. MCPHERSON: While we are waiting, I

would like to ask if any commissioner has any law that covers the subject of coal oil products and which gives satisfaction; if so I would like to know what it is and get a copy of it.

MR. HOBBS: I can send you a copy of the Ohio statute, which I think is pretty thorough.

MR. BIGLOW: I would like to call attention to one thing regarding which a resolution has been handed to the committee on legislation. About a year ago or a little less, there was organized in New Orleans the American Political Science Association, which, among other things, appointed a legislative committee which was to have several duties regarding legislation in various lines. This committee has a number of sub-committees, and I have the honor to be chairman of the sub-committee on agriculture, which includes food legislation. One of the duties of this committee is to make a compilation and a system of abstracts of legislation since 1776 in this country; another is to abstract the laws of foreign countries regarding the same things, but the feature to which I wish to call attention is this: that this association is attempting to bring about a state of affairs where the legislatures and the public may immediately have separately copies of all laws enacted, so that libraries may subscribe for these laws in such states where they are not distributed gratuitously, and we can all have, immediately after its enactment, an official copy of any law we may desire. Three states already do that, Massachusetts, Connecticut and Pennsylvania, and Idaho gives an official copy of each law. Now in those states, immediately when a law is enacted, we can secure an official copy, while in other states we have to wait until October or November. We write the Secretary of State and ask him if there has been any legislation on certain subjects, and he says no. We hear of an act being passed and write for a copy of it and we get a certified copy after two or three months and there is considerable charge for it, and then sometimes it is wrong. Now, as many of you know, I have been compiling the laws of the different states on foods, but we cannot complete our work until late in the fall because we cannot get the statutes and we cannot be sure we have all the law until we get the statutes.

Another branch of the Department of Agriculture is the biological survey, to enforce the law regarding the importation of game birds and animals; they also are required to be informed regarding legislation on the subject, and it is their duty to publish by the first of September a review of all legislation in the United States, and although the legislatures adjourn some months before that time they

find it almost impossible to comply with that law and get their information by the first of September, although they use all possible means to get certified copies from the secretary of state. I merely wanted to call attention to this because I regard it as a very important matter, and the Congress should use its influence as a whole and the various members in their own states should bring the power and influence they have to have the laws and the ordinances published separately and put in such form that we can obtain them, either with or without subscription for it. This has been put in the form of a resolution, but I shall not be here when it is presented and I wanted to make some comments on it now. The resolution is in the hands of the General Resolution Committee.

CHAIRMAN BAILEY: I thank the doctor very kindly, and if each one of the commissioners will bear that in mind it will help the matter along very much.

MR. BIGLOW: Every manufacturer of food in the United States wants one, and I think every food commissioner wants one, as soon as they can be obtained. Every state library and the library of the Department of Agriculture and of every Food Commissioner and Agricultural College could have a complete file of the laws of all the states.

MR. MCPHERSON: I would like to say that our law provides for 300 copies, which are distributed gratuitously to citizens of the state, members of the legislature and public institutions.

MR. MCPHERSON: I would like to bring up that milk question again. I am very sorry that there has been so little said in this convention about the dairy, but I would like to ask the opinion of the people here regarding the question of condensed milk. I think our laws define cream as being a certain percentage of butter fat, and yet there isn't a brand on the market that has the percentage required. Are we going to make them label the cans "milk" instead of "cream," or what are we going to do? I have got to face that question, and I am going to face it one way or the other, but I would like the opinions of some of the other gentlemen here.

MR. LADD: I took that matter up with one of the companies which does business in North Dakota, and they changed their labels to read, instead of condensed cream, it reads "condensed cream or milk." They put both words in. I have not done anything further. I would like to see a standard fixed. I couldn't find any standards that were satisfactory, and I was waiting to see what other states were doing.

MR. MCPHERSON: I can't wait much longer, and I think Mr. Harms will be in the same boat, and Mr. Bailey and Mr. McDonald.

MR. HEINER: We have taken up that matter recently. We have talked the matter over, but we haven't done anything. We have three or four new condensed milk and cream factories that are being built in our state, and we are encouraging them all we can, but we don't care to express ourselves as to just what we want to do along these lines now.

MR. MCPHERSON: Several of the condensed milk producers in Utah and one in Oregon and some others have written me about it. "Can't we take this up with the Commissioners of the Northwest and see if we can arrive at some uniformity of action? If you don't want to accept condensed cream, say so; label it condensed milk and we will do it," but they all want a fair show. I don't care so much about the Eastern States, but we have here the representatives of the Northwestern States, and we ought to get together and see if we can't agree on something. I think it ought to be labeled "condensed milk" and not cream at all.

CHAIRMAN BAILEY: We find that condensed milk runs all the way from 3 to 8 per cent of butter fat. We rarely find it over 8 per cent. They buy it on a 4 per cent basis and evaporate it about one-half, so that it runs from 7 to 8 per cent, and we have found it where it would run even lower than cow's milk; we have found it from  $3\frac{1}{2}$  to 4 per cent. We have no law on the subject now, but we will have this winter. I think it is time to take it up and find what it should be.

MR. MCPHERSON: Then would it be your idea to let it alone until the legislature meets and then take it up?

CHAIRMAN BAILEY: No, I think we should discuss it now and find what the standard should be.

MR. McDONALD: The condensed milk that comes from the East, so far as it has been analyzed by my chemist, has been very close up to the standard laid down by the Department of Agriculture. I presume when that standard was adopted it was adopted because they looked upon it as a reasonable standard, 28 per cent total solids and 7 per cent butter fat. I think that that is a very fair regulation. I think condensed milk should be condensed more than one and one-half; it should be two to one.

CHAIRMAN BAILEY: Should it be labeled "cream" or "condensed milk"?

MR. MCPHERSON: You can't label it cream if the law says cream must have 18 per cent.

MR. McDONALD: Let me explain to you: sometimes these things have a secondary meaning, and condensed, evaporated cream has come to have a different meaning than cream, and is so recognized by the Department of Agriculture in their definition. They use the words "evaporated milk" or "condensed milk," and I don't think any state could very well take up the question against evaporated cream as it now stands until there is general action by all the states, and we ought to let it remain just as it is at present. The standard I think is just, but I think it ought to be two to one and then you would have about 8 per cent of butter fat, if you had milk that contained 4 per cent; but I think, generally speaking, they use Holstein cows, and that gives a larger percentage of solids and a less percentage of butter fat. The objection raised in our state is to the coloring of the product. I have been talking to some of the parties and they say there is no coloring matter used in the manufacture of milk in the east or middle west. I have examined all the samples on the market and found coloring in only one, and that was one manufactured in Oregon, and I think even there they intended to leave out the color, as they did not understand it was in violation of any law.

CHAIRMAN BAILEY: I think they have left it out already. It was an experiment with them in putting up condensed milk, and the first lot they put out they said the customers complained it lacked color, and instead of getting the knowledge they should have got they simply put some coloring matter into it, but they stated to me a few days before I left that it was their intention to leave out all coloring matter entirely, and in fact had already done so.

MR. McDONALD: They do it to make it have a rich appearance, show a large percentage of butter fat and look creamy; and if they put in a little annato it will have the same appearance.

DR. EATON: I don't see any reason for making a standard for evaporated cream as defined by the definitions and standards issued by the Secretary of Agriculture, as there is no such article as that on the market. The evaporated cream on the market, as you all know, is a condensed milk made without the addition of cane sugar. The first condensed milk manufactured was with cane sugar as a preservative; then this other product came out, made without the use of cane sugar and some other name than condensed milk was necessary to distinguish the product, which was an entirely different product from the condensed milk first made. So they used the term "evaporated cream," which is, of course, a misnomer.

In Illinois we have solved this difficulty by requiring the manufacturer to place upon the can, in addition to and following the words "evaporated cream," the words, "An unsweetened condensed milk."

DR. FISCHER: I should like to ask Dr. Eaton whether they also permit saying in addition that when this evaporated cream is diluted in from one to two volumes of water it serves for a rich, dairy cream, which also is on all the goods canned, so far as I know.

DR. EATON: That is also a misstatement.

MR. HOBBS: I would like to ask Dr. Eaton why he says such a thing as condensed cream is not on the market.

DR. EATON: I only know it has not been marketed in Illinois except in one case, and that was to meet the Illinois requirements of a 15 per cent fat in goods that were sold as evaporated cream without an explanatory statement. That product was put on the market for a time, but was afterwards taken off.

MR. HOBBS: There is such a thing as condensed cream on the Ohio market. It is made by centripetalizing and then evaporated.

CHAIRMAN BAILEY: I think if we are going to take any action on this we ought to take it up and give the manufacturers notice that we will do so on a certain day, so as to give them time to prepare labels, and work as little hardship upon them as possible.

MR. MCPHERSON: How would it do to give them until the first of January to label their goods "condensed milk"?

CHAIRMAN BAILEY: My judgment is that that is a little soon. We gave the ketchup fellows a year to get right on their ketchup.

MR. HEINER: I think they ought to have a year.

MR. LADD: We ought to have it uniform, and before we take any decided action we ought to agree on how we will have the labels printed. I am not going to permit a different label in North Dakota whenever some of these people out there can get a little different ruling from South Dakota or somewhere else. If we can get together and have correspondence on the matter I think that would be better than to say we will have it labeled condensed milk at the present time.

MR. MCPHERSON: You take it up with us.

CHAIRMAN BAILEY: My judgment is that most of them want to do what is right. I want to work as little hardship on cream as possible. I think probably they should have a year's time, and then I think they will fall in line without any trouble whatever.

MR. MCPHERSON: There is another question Mr. Heiner and I had an argument on. Does the character of the food a cow eats make any difference in the percentage of butter fat?

CHAIRMAN BAILEY: That is a question that has been before the public for a long time. I think a 3 per cent cow under all ordinary conditions is a 3 per cent cow. Under certain conditions a cow will vary a good deal, but under ordinary conditions a 3 per cent cow is a 3 per cent cow, and a 4 per cent cow is a 4 per cent cow. I don't think the quality of the food makes any material difference on the quantity of butter fat. That is my judgment.

MR. MCPHERSON: Don't you think if you feed a cow a whole lot of oil meal that you will have a larger percentage of butter fat?

CHAIRMAN BAILEY: They have actually pumped butter fat right into a cow, and she showed no appreciable difference in the amount or quality of butter fat.

MR. MCPHERSON: I would like to ask another question. What do you do with lemon extracts? I have found that a larger per cent of the lemon extracts haven't an atom of oil in them.

MR. LADD: Up to a year ago 80 per cent of the lemon extracts had no lemon oil or vanillin at all. I made a ruling that they must label those turpenless; all extracts that contain 5 per cent and are not colored artificially shall be labeled lemon extracts, and the others must be labeled turpenless. Then I started to educate the people on what is meant by "turpenless."

MR. MCPHERSON: What does it mean?

MR. LADD: It does not mean anything. I simply do that to have the people understand that there is a lemon extract on the market that is turpenless. It is a synthetic product. I am not sure what it is made from. Now in order not to keep it out of the state, I tell them that they can sell it in the state if they label it "turpenless."

MR. MCPHERSON: Then you don't consider a lemon extract that contains 5 per cent of lemon oil that can be obtained by the precipitating process a lemon extract at all?

MR. LADD: No, sir, and such cannot be sold in our state.

CHAIRMAN BAILEY: We got some lemon extracts and went through them thoroughly and made the report that there was no oil in them. The manufacturer said he would come down and see whether there was oil and said that he saw it put in, 15 per cent of lemon oil, in the process of making it, and when he tested it himself he couldn't find any oil.

MR. LADD: I find the same thing. It is

what they call the "shake-out" process. Now the lemon oil was not used at all, that is, if they used lemon oil at all they used a very diluted article.

CHAIRMAN BAILEY: He tested the oil in this case.

MR. LADD: I agree the lemon is all right. Ninety-five per cent alcohol would make a good extract, but they put that into dilute alcohol, sometimes not over 20 to 30 per cent and shape it up and let it stand for several weeks and draw it off and that oil is then sold for other purposes, and all you have got in there is a weak solution of alcohol with the dissolved flavor that has come out of the lemon oil; there cannot be more than .2 per cent of lemon oil in it. The lemon oil is saved and sold for something else.

CHAIRMAN BAILEY: You say it is not in that solution which they make right before your eyes?

MR. LADD: It is our experience that they take out the oil. They don't put in a strong enough alcohol solution to cut it, and they sell these extracts to the bakers.

MR. BARNARD: Pure lemon oil requires a solution of alcohol to cut it of 85 to 90 per cent, consequently in the manufacture of lemon extracts the manufacturers find the lemon oil is the most costly ingredient of their extract; they also know that when they take a turpenless oil, a washed out oil, or citrol, as it is known in the trade, they can make up something that has nearly the flavor of genuine lemon extract by using only 30 to 35 per cent alcohol. We have ruled that lemon extracts must be made from genuine lemon oil pressed from lemons, and has not been washed out. It is no more fair to allow the manufacturer to take this citrol or lemon oil and make up extracts so labeled than it is to allow the manufacturer of vinegar to take acetic acid in making cider vinegar. The two situations are identical, in my opinion, because the turpines which we find in the genuine oil of lemon in a measure impart the delicate aromatics which we enjoy in the flavoring extracts.

MR. FISCHER: I believe we were the first in Wisconsin to modify a ruling in regard to lemon extracts. We were forced to do it by a law which allows all mixtures or compounds, if they are free from deleterious substances and if they are not made in imitation of other natural products or other products, and if they are labeled in a manner showing the exact character and composition and approved by the Dairy and Food Commissioner, although a ruling had existed in Wisconsin forbidding the sale of all lemon flavors which were not made

of 5 per cent of lemon oil dissolved ethyl alcohol. We ruled that the proper name for such mixtures would be "turpenless lemon flavor." The most expensive ingredient is the alcohol. I know of manufacturers who put up a lemon flavor by using 10 parts of oil and 90 parts of from 30 to 40 per cent alcohol, and they claim for their product at least as good flavoring powers as the extract of lemon made from 5 per cent oil of lemon and 95 per cent of ordinary ethyl alcohol. That is, in my mind, of course largely a question of taste. What may suit one may not suit another.

It may be interesting at this point to speak of an observation I made and which proved to me one use that was being made of this shaken-out oil of lemon, the turpines remaining with some of the flavoring constituents. I came across an extract of lemon, so called, that was being sold in the state of Wisconsin for about 15 cents a pint. According to the precipitation method it contained 100 per cent of oil. That is quite a strong criticism on that method of determining the quality of lemon extract, surely. According to the rotation method of determining the amount of oil, it assayed 15 per cent of oil, and upon examination it was found it contained a salt solvent, contained sweet oil and had been made up of turpines almost free from citrol or the other flavoring constituents of oil of lemon.

MR. MCPHERSON: I would like to hear from the Minnesota chemist, Mr. Hortvet.

MR. HORTVET: The position I take in regard to lemon extracts is that they must comply with the United States Pharmacopoeia and shall contain 5 per cent lemon oil. By that I mean the full lemon oil without any of the essential ingredients being extracted by any process. In certain processes of commercial manufacture of lemon extracts these turpines are removed, and there is a chance there for a considerable amount of deception and there is also a deterioration in the product. I do not consider that a lemon extract that does not contain all the normal constituents of lemon oil distilled in ethyl alcohol, to be an extract of good quality. And lemon extracts not containing all the constituents of lemon oil dissolved in ethyl alcohol, although they resemble in flavor the true lemon extract, are not strictly speaking, lemon extracts, and cannot be considered such. A standard lemon extract should contain 5 per cent of the whole lemon oil dissolved in ethyl alcohol.

The General Resolutions Committee then submitted their report.

MR. JONES: As Chairman of the General

Resolutions Committee, I desire to make the following report, recommending the following resolutions for adoption:

Whereas, Certain food products have distinct natural colors, which are regarded as indices of excellence and purity, therefore be it resolved by this congress:

1. That we deprecate the artificial coloring of food products to imitate the natural, distinctive tints referred to above, and urge upon food manufacturers the propriety of discontinuing the use of pigments of any kind for the purpose above mentioned.

2. That in the manufacture of food products which are mixtures or compounds having no distinctive colors and which are used as candies, confections, ices, delicacies and desserts, and which are expected by the consumer to be colored or tinted, only such colors, preferably of vegetable origin, shall be used, which are determined by acknowledged authorities to be harmless; and the use of aniline, other coal tar dyes, mineral colors and synthetic colors of all kinds is regrettable.

3. Whereas, there are available unobjectionable methods of preserving foods, for example, limited cold storage, dessication, sterilization and the use of the long-employed and condimental preserving agents, such as salt, sugar, vinegar and wood smoke; therefore it be resolved,

1. That this congress does not approve of the use of preservatives or antiseptics in the preservation of foods other than those above named.

2. That since a preservative or antiseptic other than those above named to be effective, must destroy or paralyze all fermentative organisms, they induce a condition which must be more or less unfavorable to digestion, and they are therefore to this extent hurtful.

3. That the use of preservatives and antiseptics other than those above named in minimal quantities is not a justification of their employment, since even in minimal quantities, where their use is long continued, they may become harmful.

4. That the use of preservatives and antiseptics other than those mentioned above, must be, previous to their use, justified by the manufacturer, and no citizen should be required to ascertain for himself whether or not the food we consume contains an added preservative other than those mentioned above, and therefore when any other preservative or antiseptic is added to food, the name and amount thereof should plainly appear upon the label.

Approved in part only but not signed by Sebastian Mueller.

Resolved, That the thanks of the Pure Food Congress be tendered to the newspapers of St. Louis for their comprehensive reports of these proceedings.

Resolved, That the thanks of this congress be tendered to the retiring president and secretary and officers for their faithful labors in its behalf.

Resolved, That the thanks of this International Pure Food Congress, and the National Association of State Dairy and Food Departments, be tendered to Hon. David R. Francis, President of the Louisiana Purchase Exposition, and the Honorable Howard G. Rogers, Director of Congresses, and his chief of staff, J. G. Crockett, for their hearty greeting, as well as favors shown this congress, both prior to and during the present session of this congress.

Resolved, That this congress recommends for use in canning foods in tin containers only the highest grade of tin plate; that no zinc chloride should be used in soldering, and that no solder should be in contact with the contents of the can.

Whereas, The Association of State Dairy and Food Departments recommended by resolution at St. Paul last year that the standards being formulated by the committee appointed by the United States Secretary of Agriculture be recommended for adoption by the several departments, be it

Resolved, That the commissioners and state analysts be urged to co-operate with the committee appointed by the Secretary of Agriculture in formulating these standards by furnishing all suggestions possible for the formation of an authoritative set of standards. And be it further

Resolved, That the different states and governments of the world be asked to co-operate in bringing about international uniformity of standards for the purity and quality of food substances.

Resolved, That we reaffirm the bottling in bond resolution which was adopted at the St. Paul meeting of the National Association of State Dairy and Food Departments, which resolution is as follows:

Resolved, That we approve of the bottling in bond law as it stands, and recommend that it be modified and extended in any way that would still further facilitate the distribution of pure whisky from the distiller to the consumer."

MR. JONES: This resolution is reported as a substitute for the resolution reported from the Committee on Alcoholic Beverages.

Resolved, That the Secretary of Agriculture be asked to recommend to Congress the printing by his department of the annual conferences of the State Dairy and Food Departments, and that the members of this association be urged to bring the merits of such a recommendation to the attention of their respective representatives and senators in Congress.

Be it resolved, That the congress place itself on record as favoring the immediate publication, in separate form, of each law enacted by the legis-

lature of the various states in order that official copies of all laws may be immediately available to all libraries and individuals interested.

Resolved, That the National Association of State Dairy and Food Departments, assembled at its eighth annual convention at St. Louis, September 26 to October 1, 1904, is alive to the need of more efficient drug inspection, and urges upon Congress the importance of providing legislation for such inspection.

Your Committee on Baking Powder begs leave to submit the following as representing the concensus of opinion of this food congress in regard thereto, viz.:

1. That all baking powder shall be free from deleterious, injurious or unwholesome substances.

2. That they shall contain no substances which are not necessary thereto as active agents except starch or sugar, which are recognized as essential and necessary.

3. That certain rigorous or fixed standards be recommended which shall determine the minimum amount of carbonic acid gas.

4. That all packages shall bear a correct statement of their composition in plain, legible type and language easily understood by the average purchaser and consumer, and also the name and address of the manufacturer or producer.

5. That no package shall bear any statement which will deceive or tend to deceive the purchaser.

Respectfully submitted,

Horace Ankeny,  
Moroni Heiner,  
M. A. Scovell,  
A. Cressy Morrison,  
J. W. Mallet.

Resolved, That the International Pure Food Congress sends greetings to the National Bee Keepers' Association, and desires to thank the association for its resolution extending congratulations for its labors in behalf of pure food work.

Adopted.

Resolved, That the International Pure Food Congress recognizes the importance of the Dairy Demonstration under charge of Prof. E. H. Harrington, and hereby expresses its appreciation.

Adopted.

The committee appointed by the International Pure Food Congress of the Louisiana Purchase Exposition on future international conference, recognizing from the work of this congress the desirability of uniform laws, uniform standards and uniform methods of analyses among the nations in order to facilitate commerce and protect public health, recommends: That a congress be held again next year, and that a permanent commission of seven members

be appointed to determine the place of meeting and all other questions concerning its organization.

It recommends further, that a copy of the resolutions of the congress be transmitted to all the governments for their consideration.

G. VON STIBRAL,  
SALVADORE CORDOVA,  
GUIDO ROSSATI.

Resolution presented by Mr. Critchfield, of Pennsylvania:

Whereas, Charges have been made by certain business men of New York and Baltimore, supported by their affidavits, reflecting upon this organization and especially upon certain persons claiming to be connected with it as its representatives, and

Whereas, The usefulness of the association depends upon the strict integrity of its conduct and the measure of public confidence it enjoys; therefore,

Resolved, That a committee of five be appointed to investigate said charges, and that said committee be instructed to make a full report of its findings at our next regular meeting.

(Referred to Executive Committee with power to act.)

Resolved, That this congress has heard with profound regret of the sudden death of Major H. E. Alvord, Chief of the Dairy Division of the Bureau of Animal Industry, and we desire to offer our deep sympathy to his family and to express our deep sense of the loss which the dairy industry of the country has sustained. We appreciate his long and honorable public service, and deplore the great loss which the country has suffered in his untimely death.

Resolved, That the National Association of State Dairy and Food Departments, assembled in its eighth annual session, September 26 to October 1, 1904, at Congress Hall on the Louisiana Purchase Exposition Grounds at St. Louis, Mo., hereby records its endorsement of the Hepburn Pure Food Bill, H. R. 6,295, as passed January 19, 1904, by the United States House of Representatives, and most urgently requests the passage of the same by the United States Senate.

Resolved, That the manuscripts and papers for the official report of the proceedings of this convention be submitted to the Executive Committee for revision, with authority to exclude therefrom anything that in their judgment is not proper to be made a part of said report, all papers and discussions to be submitted to the author for correction.

Resolved, That the thanks of this association be tendered to the National Association of Official Agricultural Chemists for valuable assistance rendered in the discovery and establishing of

proper standards for food products, and that we earnestly solicit their continued co-operation.

Resolved, That this food congress desires to express to the honorable, the Secretary of Agriculture of the United States, its warm appreciation of his prompt action in putting into execution the acts of Congress respecting misbranding and the inspection of all foods imported from foreign countries into the United States.

Resolved, That we appreciate the courtesy and good will of the honorable Secretary of Agriculture in sending as his representative to this convention Dr. H. W. Wiley, Chief of the United States Bureau of Chemistry, who has so ably assisted in the deliberations of this congress in its annual meeting.

Minority reports submitted by Mr. Mueller of the Committee on Colors and Antiseptics.

Resolved, That all harmful colors and all colors concerning which there is doubt as to their harmful qualities be prohibited in foods, and that the use of all other colors in foods be made known to the consumer.

That the use of all antiseptics be restricted to extreme conditions necessitating their use, and whenever used the amount and name of antiseptic be made known to the consumer.

Sebastian Mueller.

Tabled.

PROF. SHEPARD: There is a little matter on behalf of the chemists of the association that I would like to say a word about, and it is this: In regard to the food standards. The chemists of the association are brought in daily contact with all the problems concerning food inspection and it is to their dictum that everybody must bow. It seems to me that it would be a good plan if this association would appoint a committee on standards from the chemists of the association, in order that we might enlist this great body of men. Of course when standards are fixed once new conditions are continually arising. Now, for instance, in this canning industry, we have got to take some stand on that and we will have chemists here that will understand those things. Now the object of having this committee appointed is simply to keep us abreast of the times and have the best that is going and the newest on that industry, and perhaps there is no need of my making any further statement in regard to the matter. I am not saying this because I want to be made chairman of the committee, but I do think this committee ought to be appointed, and I would like to hear from some of the other members.

MR. HOBBS: It seems to me the remarks are well chosen, and I think if a committee of that kind is appointed, as a standing committee for

the year, at the end of that year a report could be received from them that would be of great advantage to the members of this association.

THE CHAIRMAN: If you will put that in the form of a motion we can act on it.

MR. HOBBS: I move that the chairman appoint a committee of five to revise Food Standards, including the use of tin for canned goods, to report at the next annual meeting.

CHAIRMAN BAILEY: I am totally in the dark as to who you want on that committee.

MR. SCOVELL: I am decidedly in favor of such a committee and think it would be well to have a committee of that kind.

PROF. SHEPARD: Here we have got Prof. Ladd of North Dakota and Prof. LaBach and Dr. Fisher and the gentleman from Ohio, Mr. Hobbs, and there are a whole lot of these men who could serve on this committee.

CHAIRMAN BAILEY: It is moved and seconded that a committee of five be appointed to work on the matter of revising food standards and methods of analysis to report at the next Annual Convention.

The motion was then put to a vote and duly carried.

PROF. SHEPARD: I would like to inquire if we cannot have the services of Prof. Winton or somebody from Connecticut.

The following committee was then appointed by the chairman:

Dr. E. N. Eaton, Illinois; Prof. A. L. Winton, Connecticut; Prof. Ladd, North Dakota; Mr. Hobbs, Ohio, and Dr. Fisher, Wisconsin.

CHAIRMAN BAILEY: Is the Committee on Nominations ready to report?

MR. EMERY: I want to state to you frankly that from a personal standpoint, a position on the nominating committee is one that I do not covet and never have. The committee has had the matter under consideration and has considered the matter of who shall be nominated. It has gone over the matter carefully, having considered the matter geographically, and we would have been glad if there were more offices of president to fill. We find that this association has a large number of good men qualified to serve as president and in the various other offices, and the fact that we have chosen the name of any one is not to be taken as the judgment of the committee that there are not others equally fitted for the position, and in submitting the nominations we have this suggestion to make: It is, I believe, not required, but it is the judgment of this nominating committee than an unwritten law of this association to be followed would be a good one, and that is, that the president of this association should serve

but one term. That is quite customary with other associations of this kind, and the committee believe it would be a good practice for this association to adopt.

The committee begs leave to report the following nominations:

For President, W. W. P. McConnell, of Minnesota.

For First Vice-President, J. B. Noble, of Connecticut.

For Second Vice-President, C. P. Sherwood, of South Dakota.

For Third Vice-President, A. L. Leach, of Massachusetts.

For Secretary and Treasurer, R. M. Allen, of Kentucky.

For Executive and Legislative Committee: A. H. Jones, of Illinois; E. A. McDonald, of Washington, and Horace Ankeny, of Ohio.

Mr. President, in conformity with custom, I move that the persons nominated be declared the officers of this association, and that the secretary cast a ballot for that motion.

Which motion was duly seconded and carried.

The secretary thereupon cast a ballot for the persons nominated and they were declared duly elected as officers of the association for the ensuing year.

#### REPORT OF AUDITING COMMITTEE.

Your committee beg leave to report that they have examined the report of Secretary R. M. Allen and find the accounts correct and properly vouchered with a balance to Sept. 20 of

Exhibit Fund of \$678.81, and recommend that the new Auditing Committee be extended to examine the account of H. B. Meyers and to audit all outstanding accounts in regard to expenses in attending sessions of the members of the Executive Committee during the past year and to report same to Executive Committee as soon as the accounts are duly audited.

On motion of Mr. Noble, duly seconded, the fixing of the place for the next annual convention was referred to the Executive Committee.

On motion of Mr. Allen, the matter of printing the proceedings of the congress and convention was referred to the Executive Committee, with power to revise and print the same as they see fit.

CHAIRMAN BAILEY: I want to say that after two years' connection with this association as president, I believe it is doing better work and more really good work than any other association in the United States. The men I have met with here have been my hearty supporters. Since my election as commissioner six years ago I have attended every meeting except one, and I shall attend every meeting in the future if it is possible, and I retire from the presidency of this association with heartfelt thanks that I have had the pleasure of meeting with such a body of men as I have.

MR. HOBBS: I move that we adjourn subject to the call of the Executive Committee.

Which motion was duly seconded and carried, and the congress adjourned.

## Ninth Annual Convention, Portland, Ore., (Lewis & Clark Centennial) July 10, 11, 12, 13, 14, 15, 1905.

### ERRATA

The following corrections were received too late to insert in proper place.

On page 93, 2d column, line 38, after letter F should be "N," so as to read "F. N. Barrett."

On page 94, 1st column, line 14, between the words movement and inaugurated should be the word "was," so as to read "movement was inaugurated."

On page 94, 1st column, line 28, the letter "s" should be added to the word idea, so as to read "ideas."

On page 105, 1st column, line 26, insert after the word subjects "the former being possessed of absolute," so as to read, "the former being possessed of absolute and uncontrollable power."

On page 105, 2d column, line 8, after the word enactments the word "by" should be used instead of the word upon, so as to read "enactments by its legislative branch."

On page 106, 1st column, line 6, after the word laws insert the words "regulating or," so as to read, "the various laws regulating or prohibiting."

On page 106, 1st column, line 22, after the word "of" insert the word "the," so as to read, "of the authority and powers."

On page 106, 2d column, line 9, the word legislation should be "regulation" and on line 10 the word regulation should be "legislation," so as to

read, "Every measure of State regulation, however legitimate in itself, yields to positive legislation of."

On page 106, 2d column, last line, reading state has should be, "state had."

On page 107, 1st column, line 36, reads, whose unwholesomeness and unhealthfulness, should be, "whose wholesomeness or unhealthfulness."

On page 107, 1st column, line 51, after vs. insert the word "the," and after the word where read, "Weller vs. the State, 53 O. S., where," should be a comma instead of a hyphen, so as to

On page 107, 1st column, line 53, reads, grain and passed, should be, "grain was passed."

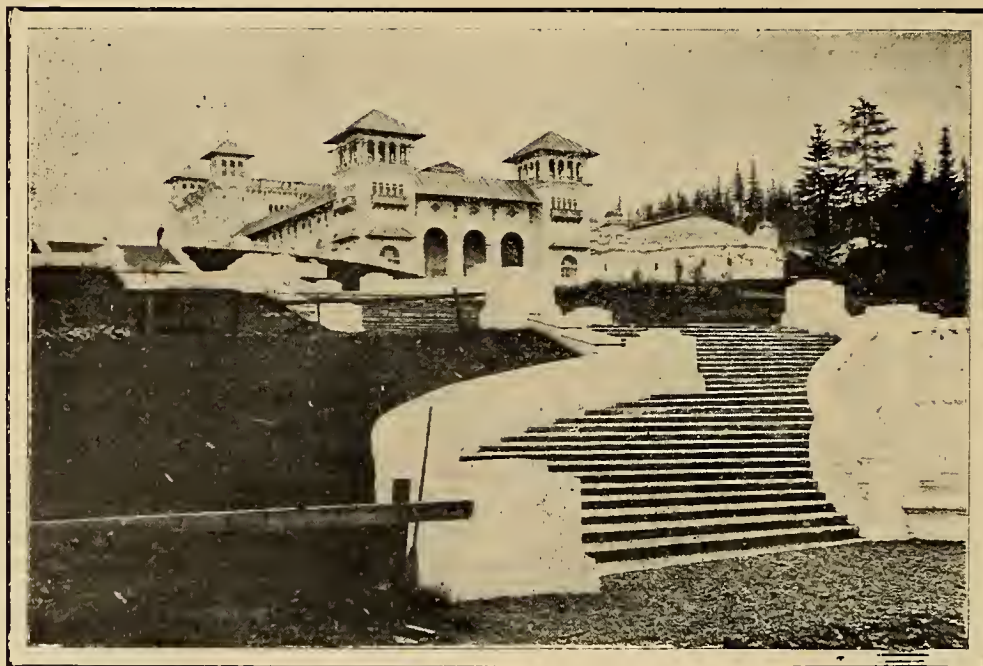
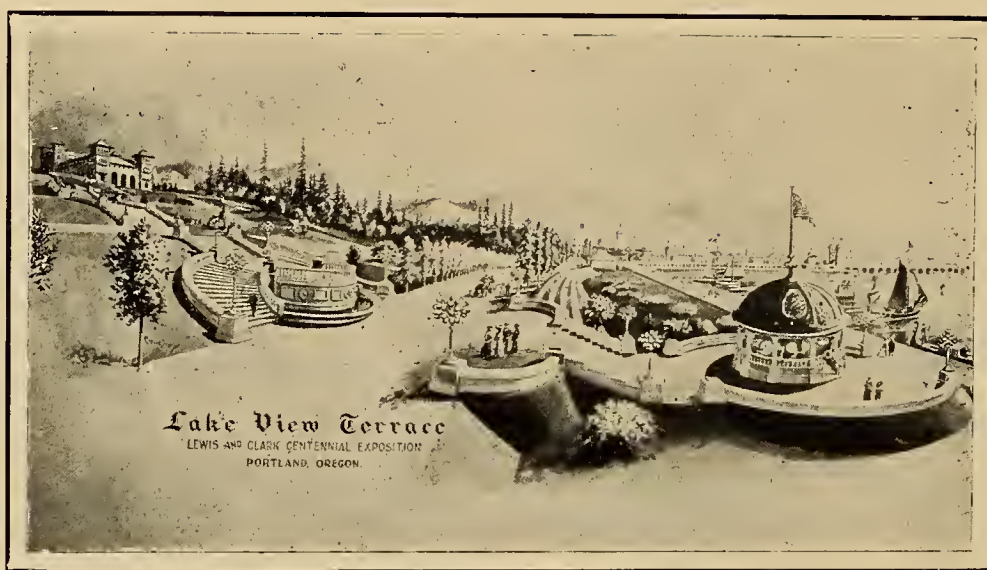
On page 107, 1st column, line 59, insert before the word matter "coloring," so as to read, "coloring matter."

On page 107, 2d column, line 11, insert after the words would be, the word "held," so as to read, "would be held."

On page 107, 2d column, line 33, reads, amendment of the, should be "amendment to the."

On page 116, 2d column, line 25, reads Discussion by J. D. Smithers, should be "Discussion by William W. Smithers."

On page 250, 1st column, 1st line, reads, Address of Julius Hortvelt, should be "Address of Julius Hortvet."



GRAND STAIRWAY SHOWING EUROPEAN, ORIENTAL AND FOREIGN EXHIBITS.

**Views of The Lewis and Clark Centennial where the Ninth Annual Convention of The National Association of State Dairy and Food Departments will be held.**



GOVERNMENT BUILDING.



LIBERAL ARTS BUILDING.

**Views of The Lewis and Clark Centennial where the Ninth Annual Convention of The National Association of State Dairy and Food Departments will be held.**

EXTRACT FROM THE

**Report of the Secretary,**

ANNUAL MEETING

**American Baking Powder Association,**

NEW YORK, MONDAY MORNING, OCT. 12, 1903

Perhaps the most vital circumstance of the past year's work of the Association, and the event of most primary importance, on which the whole superstructure of our other work necessarily rests, is the ultimate demonstration of the fate of aluminum taken into the system in food prepared with "alum" baking powder.

Previous experiments had demonstrated favorably our contention that food prepared with "alum" baking powder was wholesome, showing:

First, That "alum" baking powder food does not interfere with the secretion of the gastric juices;

Second, That it does not retard digestion;

Third, That it does not prevent the complete utilization by the system of the full nutritive value of food;

Fourth, That when eaten by animals in excessive quantities, and almost exclusively from infancy to maturity, it does not interfere with normal development;

Fifth, That in the case of pigs living on a diet exclusively composed of "alum" baking powder bread and milk, a rigid analysis of every portion of the body showed that no aluminum was accumulated or stored up in the body;

Sixth, That human beings eating "alum" baking powder continuously for long periods of time, showed, after a most minute physical examination, a condition of perfect health, digestion, nutrition, vitality and weight.

While these investigations resulted in the inevitable conclusion that "alum" baking powder food was wholesome, still one question remained to be solved, which, like the keystone of the arch, would completely support all the other facts ascertained and settle finally and conclusively all further arguments. This question was, "What is the fate of the aluminum ingested with 'alum' baking powder food in the case of human beings?" Most elaborate experiments were conducted, with every safe guard provided to prevent the possibility of error, and the result was the disclosure of the following indisputable facts:

First, That the aluminum was not soluble in the gastric juices of human beings;

Second, That it had no effect whatever upon the system;

Third, That it had but one channel of elimination;

Fourth, That it was all entirely eliminated.

These conclusions, re-inforcing those which had been reached before, strike a body blow at the theories and deductions hitherto advanced, and answer completely every question and every argument which has been raised since the inception of the so-called "Alum War" in 1876.

The Association is to be congratulated on the complete demonstration of the wholesomeness of its product.

**Detailed Copies of the Reports of These Experiments will be Furnished on Application**

All members of this Association so manufacture their baking powders as to comply with the pure food laws, both as regards ingredients and proper labeling.

AMERICAN BAKING POWDER ASSOCIATION, Townsend Building, New York.



SALMON FISHING IN THE COLUMBIA RIVER.



COLUMBIA RIVER NEAR PORTLAND.

**Views of The Lewis and Clark Centennial where the Ninth Annual Convention of The National Association of State Dairy and Food Departments will be held,**

# CANDY ADULTERATION STOPPED

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## MAGNIFICENT RESULTS ACHIEVED BY THE NATIONAL CONFECTIONERS' ASSOCIATION

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THE NATIONAL CONFECTIONERS' ASSOCIATION OF THE UNITED STATES was organized in 1884, and comprises in its membership nearly the entire wholesale candy manufacturing trade of the country.

On the formation of the Association, the absolute prevention of the hurtful adulteration of confectionery was declared to be its first object.

It was soon found that for want of suitable laws, criminal prosecutions for injurious adulteration of confectionery could not be successfully maintained and in 1885, the year following the organization of the Association, its Executive Committee was convened at Cincinnati to determine what course could best be pursued to obtain needed legislation.

Legal advice was taken and it being thought to be impracticable to procure the passage of a national law on the subject on account of its doubtful constitutionality, it was decided to investigate the laws of each of the manufacturing States, to frame bills adapted to their respective legislative requirements and to urge their enactment into laws.

Through the direct efforts of the National Confectioners' Association, specific and stringent laws against all hurtful adulterations of confectionery have been passed in the States and in the years as follows:

New York, Ohio, Massachusetts, Tennessee, Michigan and Pennsylvania in 1886; Maryland in 1890; Vermont in 1894; Maine, New Jersey and Connecticut in 1895; South Carolina, Utah, Rhode Island and Georgia in 1896; Alabama, Wyoming, Nevada, North Dakota, Florida and Missouri in 1897; Virginia, Iowa, District of Columbia, and Louisiana in 1898; Montana, Idaho, Indiana, New Hampshire, South Dakota, Oregon, Delaware, North Carolina and Illinois in 1899; Arkansas in 1901; and Kansas in 1903.

Some of the above named states have since incorporated these specific candy laws in their General Pure Food Laws and in some instances other enactments have supplemented or superceded the Candy Laws passed through the efforts of the National Confectioners' Association.

Pure food laws or pure candy laws, or both, are also in force in the States of Wisconsin, Kentucky, California, Mississippi, Minnesota and Washington, although in some of these States the statutes fall short of the desired standard.

In what is known to confectioners as the "Candy Clause," confectionery is declared to be adulterated:

**"If it contain terra alba, barytes, talc, chrome yellow, or other mineral substances or poisonous colors or flavors, or other ingredients deleterious or detrimental to health."**

The above definition is simple, direct and inclusive and not a single additional word can be shown to be needed for the protection of the public health. It was incorporated in the National Pure Food Bills which passed the House of Representatives in the 57th and 58th Congresses and is made by the United States Government the basis for determining the purity of imported confectionery and for the standard adopted by the United States Department of Agriculture and recommended by it "for the guidance of the officials of the various States and of the Courts of Justice."

It is above all things essential to the business interests of confectioners that State laws be uniform and the well meant amendments to the above quoted "Candy Clause," which have been adopted in a few States, have only served to needlessly antagonize and interfere with the work which the National Confectioners' Association has been carrying on for the past twenty years.

In November, 1888, the Association issued fifty thousand circulars publicly announcing its standing offer of \$100 for such proof of the hurtful adulteration of confectionery as would enable the Association to obtain a criminal conviction.

In 1894 the Association appropriated \$800 to advertise its aims and methods in the columns of the daily press.

In 1897 the Association collated and printed in book form all the Pure Candy and Pure Food Laws then existing, this being the first compilation of that character, and absolute accuracy being secured through certificates from the respective Secretaries of State.

In addition to the reward above mentioned the Association tenders the services of a competent chemist and will test suspected samples of confectionery free of charge. To further prove its absolute good faith it will, if desired, in any alleged candy poisoning case pay the expense of having the candy analyzed by a chemist other than the Association's chemist, provided only that the chemist so selected shall be one of recognized scientific attainments.

The Association will mail to any one desiring it a copy of its last annual pamphlet inviting especial attention to reports of chemists and physicians.

It utterly discredits the vague, general and unsubstantiated statements about candy poisoning which are so often given to the press and in some cases by men who ought to be ashamed to make charges which they do not prove.

There is no secrecy about the manufacture and sale of candy, no difficulty in getting any desired quantity of any particular kind or color or brand.

Why is it that no one of the calumniators of confectionery has ever yet been able to produce for analysis a single pound of candy that any reputable chemist in the country would say is injurious to health?

The National Confectioners' Association desires the assistance and co-operation of health officers throughout the country, to many of whom it is already under obligations.

Communications may be addressed to F. D. Seward, Secretary, St. Louis, Mo., or to H. W. Hoops, Chairman Executive Committee, 271 Mulberry St., New York City.

April, 1905.

INCORPORATED 1896

# National Wholesale Liquor Dealers' Association of America.

Office of the Secretary: Room 1601 Arrott Building, Pittsburg, Pa.

Telephone, Court 315

## OFFICERS:

President, A. J. SUNSTEIN, of the Thompson Dist'g Co., Pittsburg, Pa.  
 First Vice-Pres., SAMUEL WERTHEIMER, of A. Guckenheimer & Bros., Pittsburg, Pa.  
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 General Counsel, WARWICK M. HOUGH, Rialto Building, St. Louis, Mo. Secretary, DAVID STAUBER, Pittsburg, Pa.

## EXECUTIVE COMMITTEE:

SAMUEL GRABFELDER      LOUIS GERSTLEY      AUGUST GRAF      GEO. F. DIETERLE      HENRY STEINHARDT  
 and the PRESIDENT ex-officio.

## BOARD OF CONTROL:

### FOR ONE YEAR:

L. GERSTLEY, of Roskam, Gerstley & Co., Philadelphia  
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 WM. A. BOYKIN, of Ulman, Boykin & Co., Baltimore  
 GEO. S. NICHOLAS, of New York City  
 CHAS. G. SCHENCK, of Lang, Schenck & Co., Columbus  
 GEO. F. DIETERLE, of the Union Dist'g Co., Cincinnati

### FOR TWO YEARS:

S. J. LANAHAN, of Wm. Lanahan & Son, Baltimore  
 S. GRABFELDER, of S. Grabfelder & Co., Louisville  
 M. W. MURPHY, of Delaney & Murphy, Chicago  
 E. L. SNYDER, of P. W. Engs & Sons Co., N. Y. City  
 ADOLF STEIN, of Stein Brothers, Chicago  
 L. EINSTEIN, of Ulman, Einstein & Co., Cleveland  
 S. RHEINSTROM, of Rheinstrom, Bettman, Johnson & Co.,  
 Cincinnati  
 E. V. DOUGHERTY, of J. A. Dougherty's Sons, Phila.  
 JAS. T. McHUGH, of Clifton Springs Dist'g Co., Cin'ti  
 S. HIRSCH, of S. Hirsch & Co., Kansas City

### FOR THREE YEARS:

J. WALTER FRIEBERG, of Frieberg & Workum, Cin'ti  
 J. H. CARSTAIRS, of Carstairs, McCall & Co., Phila.  
 HENRY STEINHARDT, of Steinhardt Bros. & Co., N. Y. City  
 ALEX. D. SHAW, of Alex. D. Shaw & Co., New York City  
 FRED. WESTHEIMER, of F. Westheimer & Sons, St. Joseph  
 R. N. WATHEN, of Mueller, Wathen & Kobert, Lebanon, Ky.  
 FREDERIC L. FELTON, of Felton & Son, Boston, Mass.  
 E. R. LILIENTHAL, of Crown Dist. Co., San Francisco, Cal.  
 GEO. G. BROWN, of Brown-Forman Co., Louisville  
 GEO. C. HOWELL, of Samuel Streit & Co., New York City

## WHAT IT STANDS FOR.

"RESOLVED, that the National Wholesale Liquor Dealers' Association of America, representing in its membership all branches of the whiskey interest, advocates the pure food principle and recommends the passage of a law which shall prohibit the sale of any whiskies which contain any poisonous or deleterious substances whatever, whether added or otherwise, but condemns those provisions of the McCumber Pure Food Bill which tend to discriminate against blended whiskies in favor of what are commercially termed straight whiskies, without reference to their purity or impurity."

—Resolution adopted at Convention of 1904.

# IMPURE WHISKEY

**The term PURE WHISKEY is properly understood by the public to mean a whiskey which is free from impurities.**

The word "PURE" means wholesome or ordinarily pure, as used in Act 1874, requiring water companies to furnish pure water. —**Commonwealth v. Towanda Water Works, 15 Atl. 440.**

**IMPURE WHISKEY is a whiskey containing a large amount of impurities.**

"There are volatile principles naturally existing in the grains which accompany the liquor in all its changes and give their characteristic flavor to the resulting spirit. These can scarcely be considered as impurities; but there are others produced during the process of fermentation which seriously serve to CONTAMINATE the product. Among these is FUSEL OIL . . . from which it is very desirable that the spirit should be freed as soon as possible."—**United States Dispensatory.**

"The term 'FUSEL OIL' means a collection of these higher alcohols which are produced in the fermentation of the mash. These alcohols, however, pass over with the water in the still. Some of them have higher boiling points, but they are carried over mechanically, so that they all appear in greater or less quantities in the product. Now, in order that this product be good for consumption, it is NECESSARY THAT THIS FUSEL OIL BE REMOVED."—**Statement of Dr. H. W. Wiley before the Pure Food Congress.**

"When whiskey is BOTTLED IN BOND there is no guarantee in the Government's stamp that it is wholesome. It may be, as Mr. Hough says, a very unwholesome article. THE GOVERNMENT DOES NOT GUARANTEE THE PURITY,"—**Statement of Dr. H. W. Wiley before Senate Committee on Manufactures.**

## Bottled in Bond Whiskies Most Impure

**As shown by recent prosecutions under Pure Food Laws of Minnesota.**

"'BOTTLED IN BOND' is the alluring and reassuring labels on bottles of whiskey which are being sold to retail dealers in the Twin Cities, and by them dispensed to patrons. Analysis by the chemists employed by the Dairy and Food Department of the State shows that in many instances the whiskey contains ENOUGH FUSEL OIL TO KILL A GUINEA PIG."—**St. Paul Dispatch, Thursday, January 5, 1905.**

"In two or three samples of BOTTLED IN BOND WHISKEY I did find in the neighborhood of 0.50 per cent of fusel oil. These results were a great surprise to me, and on repeating the analysis I was unable to lessen the results materially."—**Statement of Julius Hortvet, Chemist of Dairy and Food Department of Minnesota.**

"It is quite natural that any distiller, finding himself with a lot of poor goods on hand, should seek some way to get rid of what he cannot sell to his regular wholesale customers, so he BOTTLES IT IN BOND and depends on the little green stamp to help him work it off on an unsuspecting public."—**DeBar's Circular.**

## Rectification Alone Produces Pure Whiskey

"Pouring the wines into the vat was the first act toward rectification, which was followed by the rectifying process, THEREBY changing the wines into WHISKEY."—**U. S. vs. 8 Bbls., 6 Int. Rev. Rec., 124. U. S. Court decision, 1867.**

# Chr. Hansen's Laboratory

Copenhagen, Denmark ————— Little Falls, N. Y.

HEADQUARTERS

FOR

## Extracts of Rennet, Dairy and Junket Preparations

### Department of Dairy Preparations:

LIQUID RENNET EXTRACT }  
LIQUID CHEESE COLOR } for Cheese Factories.

RENNET TABLETS }  
CHEESE COLOR TABLETS } for Cheese Making on the Farm.

THE MARSHALL } for ascertaining the condition of the milk in the  
RENNET TEST } cheese vat.

DANISH BUTTER COLOR—a pure vegetable preparation.

LACTIC FERMENT—for ripening cream and milk.

### Department of Junket Preparations:

JUNKET is a dainty, delicious pudding made by adding a little pure rennet ferment to sweet milk or cream. This is the whole story in a nutshell. But, by means of various dainty fruit Colors and Flavors, a great variety of dainty desserts can be easily and quickly made with these wonderful little tablets.

—FOR ICE CREAM the Junket Tablets are invaluable; all authorities on cooking recommend them.

—FOR CHILDREN AND INVALIDS there is no better food than Junket.

JUNKET TABLETS—for dainty milk desserts and ice cream.

JUNKET COLORS, delicate and harmless; 6 colors—Berry Blue, Grape Green, Plum Purple, Raspberry Red, Lemon Yellow and Orange Gold.

JUNKET FLAVORS, absolutely pure; no artificial flavors; only the following twelve natural flavors: Vanilla, Lemon, Orange, Nutmeg, Almond, Allspice, Ginger, Clove, Cinnamon, Rose, Peppermint and Wintergreen.

MANUFACTURED AND PUT UP ONLY BY

————— CHR. HANSEN'S LABORATORY —————

P. O. Box 3001.

LITTLE FALLS, N. Y.

# BORDEN'S

Brands Have Received

## HIGHEST AWARDS

Wherever Exhibited

**EAGLE  
BRAND**



**CONDENSED  
MILK**

**PEERLESS  
BRAND**



**EVAPORATED  
CREAM**

**BORDEN'S**



**MALTED  
MILK**

The Best that Science Can Produce

## Borden's Condensed Milk Co., New York

The Largest Manufacturers of Milk Products in the World

ESTABLISHED 1857

ESTABLISHED 1844

**SAM THOMPSON  
PURE RYE  
WHISKEY**

---

**NONE FINER**

**MADE ON THE MONONGAHELA RIVER  
WEST BROWNSVILLE, PA.**

**THOMPSON DISTILLING COMPANY  
PITTSBURG, PA.**

**WE BOTTLE IN BOND**

# Atlas Vegetable COLORS

---

In addition to the well-known standard Atlas Guaranteed Non-Poisonous Colors—of coal tar origin—we have recently put on the market to meet the preference of certain manufacturers and officials, a line of **ABSOLUTELY VEGETABLE COLORS** for food purposes.

We would be glad to hear from you if interested in colors for foods and beverages.

---

## H. Kohnstamm Co.

112-114 Franklin Street, CHICAGO, ILL.

87-89 Park Place, NEW YORK, N. Y.

**Palmatina**

The Modern Shortener  
and Frier

**Snowdrift**

The Popular Cooking  
Fat

**Snowdrift Soap**

The Purest and Best of  
all Bath and Toilet Soaps

**Snowdrift Washing  
Powder**

The Quick, Easy  
and Safe Cleaner

**Wesson Salad  
Oil**

Purely Vegetable, Delicious  
Appetizing and Healthful

**Wesson Cooking  
Oil**

Highest Grade, Purely Vege-  
table, Economical, Healthful

**Verda Soap**

The Best 5 Cent Toilet  
Soap in the World

**Tarcura Soap**

The Luxury Soap

**SOUTHERN COTTON OIL CO.**

NEW YORK

SAVANNAH

ATLANTA

NEW ORLEANS

U S E

# Gehlert's Pure Cider Vinegar

MADE BY

**BENTON FRUIT PRODUCTS CO.,** Benton Harbor, Mich.



## BOWN BRO'S.

Manufacturers and Shippers of

### AMERICAN EVAPORATED APPLES

*Special Facilities for Export Shipments to Long Distances and Carton Packages of all Descriptions.*

**DESPATCH, N. Y.**

## S. Grabfelder & Co.

### DISTILLERS

**LOUISVILLE, KY.**

Registered Distillery No. 401, at Clermont, Kentucky, 5th District

Distillers of

## Echo Spring & Cane Spring

**Cane Spring Whiskey bottled in Bond**

Blenders of High Grade Whiskies, such as Clermont Rye, Rose Valley, Etc., Etc.

GUARANTEED ABSOLUTELY PURE

## CHOCOLAT-MENIER

The Celebrated French Vanilla Chocolate

Used the world over for breakfast  
and soirees instead of tea or coffee

**CACAO-MENIER** Menier's Breakfast  
Essence of Cocoa

Unites in a  
perfect form  
all qualities  
of a healthy  
and strength-  
ening food.



Is easily di-  
gested and  
is specially  
beneficial to  
people suffer-  
ing from dys-  
pepsia and  
weak nerves.

**Menier's Superfine Chocolates and Bon-Bons**

Annual sales exceed 36,000,000 pounds

Grand Prix—Highest Award—St. Louis 1904

If not acquainted with manner of preparing  
Menier's Chocolate and Cocoa write to

**MENIER,** 250 W. 27th St., New York  
or 66 Wabash Ave., Chicago



# Golden Age CHAMPAGNE

A clean, pure wine, made from  
the best stock. We invite com-  
parison with any brand and will  
be pleased to submit samples  
to any responsible merchant.

ADDRESS

**Hammondsport Wine Co.**  
Hammondsport, N. Y.

## D. B. Scully Syrup Co.

Manufacturers of and  
dealers in everything  
in Syrups and Molasses  
Jellies and Preserves

**Maple Syrups**

**Corn Syrups**

**Cane Syrups**

**N. O. Molasses**

**Sorghum**

**Glucose**

**Jellies**

**Preserves**

**Rock Candy and Rock Candy Syrup**

**D. B. Scully Syrup Co.**

416-428 Illinois St., CHICAGO

# EDDY'S Old English Worcestershire Sauce

Made and bottled in the U. S.

**E. PRITCHARD, Sole Proprietor,**  
331 Spring St., N. Y.

# SOUTH HAVEN PRESERVING CO.

Manufacturers of Fruit Products, Canned Fruits,  
Fruit Syrups, Crushed Fruits, Preserves and Cider

GUARANTEED PURE FOODS

**SOUTH HAVEN, : MICHIGAN**

# THE LEROUX CIDER & VINEGAR CO., TOLEDO, OHIO.

Manufacturers of the Celebrated Red Star Brand Pure Food Products

Catsup  
Sweet Cider  
Sauer Kraut  
Cider Vinegar

Chili Sauce  
Apple Butter  
Mustard  
Preserves

Jelly  
Table Sauces  
Relishes  
Pickles in bulk and glass

WE SOLICIT YOUR CORRESPONDENCE AND PATRONAGE

## Pure Condensed Milk

# LION BRAND Condensed Milk and Evaporated Cream

NOT A CHEAP milk and cream, but always safe and reliable for babies. BEST FOR FAMILY USE. Guaranteed absolutely pure. Always the same. Write for booklet. Save the labels.

**TRY A CAN**

**3**

**DO IT NOW**

**WISCONSIN CONDENSED MILK CO.**  
**91 Hudson Street, New York**

# CALIFORNIA WINE ASSOCIATION

661 to 671 Third Street,  
San Francisco

Capital - - \$10,000,000

**WINERIES and DISTILLERIES**  
**in Every Grape Growing**  
**District in California**

## AGENCIES

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**GOLD MEDALS AWARDED AT**  
**PARIS EXPOSITION, 1900    PAN-AMERICAN EXPOSITION, 1901**  
**ST. LOUIS, 1904**

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**Exporters to Great Britain, Germany, Denmark, Norway, Sweden**  
**Holland, Belgium, Finland, China, Japan, Mexico, South**  
**america, Central America, and all**  
**United States Possessions.**

# **ZIPPP'S U. S. P. Flavoring Extracts**

*Are made according to formulae in the  
United States Pharmacopeia*

*Purity guaranteed.*

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**The Zipp Manufacturing Co.**  
**CLEVELAND OHIO**

## **PETER COOPER'S CLARIFIED GELATINE FOR WINE, JELLIES, BLANC MANGE, CHARLOTTE RUSSE**

OUR PULVERIZED GELATINE is the most convenient for family use,  
as it dissolves in a few minutes.

FOR SALE BY ALL GROCERS

and at 13 Burling Slip, New York City



ESTABLISHED 1808

# P. W. Engs & Sons

Distillers, Importers and  
Wholesale Liquor Dealers

268 West Broadway, New York

Proprietors of the Well Known

## ENGs Baltimore Rye Whiskey

A High Grade Blend of the  
Choicest Maryland Ryes

IN BULK AND CASE

## STANDARD Fruit Juices and Fruit Syrups

as supplied by the

**I. Calvin Shafer Co.**  
NEW YORK

have been the standard goods for the past  
70 years, and are guaranteed absolutely  
pure, containing *no ethers, acids, colorings,*  
or poisonous matter. Are made from Native  
fruit. *Write for samples and prices.*



. . . The . . .  
*Glucose Sugar Refining Co.*  
*Chicago, Illinois.*

Manufacturers of . . . . . *High Grade Corn Syrups*  
**Pure      Wholesome      Nutritious**

Our Leaders: ❖ ❖ ❖

**Golden Glory Fancy Table Syrup**  
**Kairomel Brand Corn Syrup**

(Put up in hermetically sealed friction top cans.)

YEARLY AVERAGE OUTPUT:—30,000,000 CANS

**THE DAVENPORT SYRUP REFINERY OWNED AND OPERATED BY THIS COMPANY IS THE LARGEST AND MOST COMPLETE CORN SYRUP REFINERY in the World**

“Glucose is from the Greek ‘*Glykos*,’ signifying sweet. This commercial name has served to mystify the public and to mislead as to the character of our products. Were they simply called ‘Corn Syrup,’ their names would truly indicate just what they are and the mystery would be dispelled.”

The Hon. Cyrus Edson, Commissioner of Health, New York City, in his report Oct. 12th, 1894, stated the following:

“Glucose may be justly called pre-digested Starch, since it is Starch in the exact condition that we find prepared by the digestive organs for assimilation. Glucose is pre-eminently a fat-forming, heat-producing food. Under a diet of Glucose, a man can perform more muscular work than under any other single article of food. Glucose is not only not injurious, but it is an essential article of food without which, in some form, man cannot enjoy life.”

The United States Commission on Food Standards at its last Executive Session incorporated Corn Syrup among the Standards of the Sugar Schedule.

Guaranteed  
to be  
Absolutely  
**PURE RYE**



DISTILLERY  
GRAFTON LANDING,  
MARYLAND



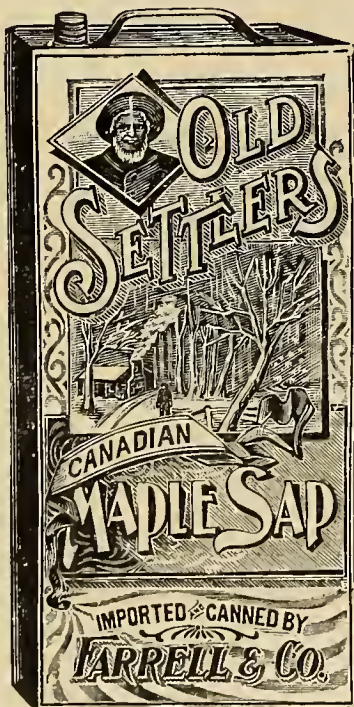
Old Governor  
Glen Forest  
and  
Old Capitol  
**BOURBONS**



DISTILLERY  
No. 106 LOUISVILLE  
KENTUCKY

**Farrell & Co.**

217-219-221-223 S. 8th Street  
OMAHA, NEB.



Manufacturers  
and Refiners of

**Syrups  
Molasses  
Jellies  
Preserves**

**Tin Can  
Manufacturers**

*A word to the wise  
is sufficient*

**Lamon's Maple Syrup**

is pure Maple Syrup

**Lamon's Pure Honey**

is pure Honey

We trust the dealers will be governed by their better judgment and carry in stock those goods which will enable them to comply with the Food Laws, will satisfy the consumer, and build up their business.

**LAMON-GOHL SYRUP CO.**

23 West Randolph Street :: :: CHICAGO

# BOHSEMEEM SPICES

ARE STANDARDS OF THE  
HIGHEST TYPES IN SPICES



Fac Simile

of Label

**WEIKEL & SMITH SPICE CO.**  
PHILADELPHIA

## PURE FOOD VINEGARS

ESTABLISHED 1858

**CHAS. E. MEYER & CO.**  
FREEPORT ILLINOIS

# I. W. HARPER RYE

*"ON EVERY TONGUE"*

GRAND PRIZE HIGHEST AWARD AT ST.  
LOUIS WORLD'S FAIR

*Pronounced by the World's Best Experts*

The World's Best Whiskey

*Sold by leading dealers everywhere*

Bernheim Distilling Co., Louisville, Ky.

## HAZEL-ATLAS GLASS COMPANY

MANUFACTURERS OF

GLASS JARS

For PACKERS' USE

WHEELING, - W. VA.

# "R. & R." GOODS

**"NOT HOW CHEAP,  
BUT HOW GOOD"**

Plum Pudding, Boned Chicken, Boned Turkey,  
Rolled Ox Tongue, Boneless Hams, Soups,  
Curried Fowl, Potted Meats, Lunch Meats,  
Truffled Chicken Livers, Curried Oysters, Etc.

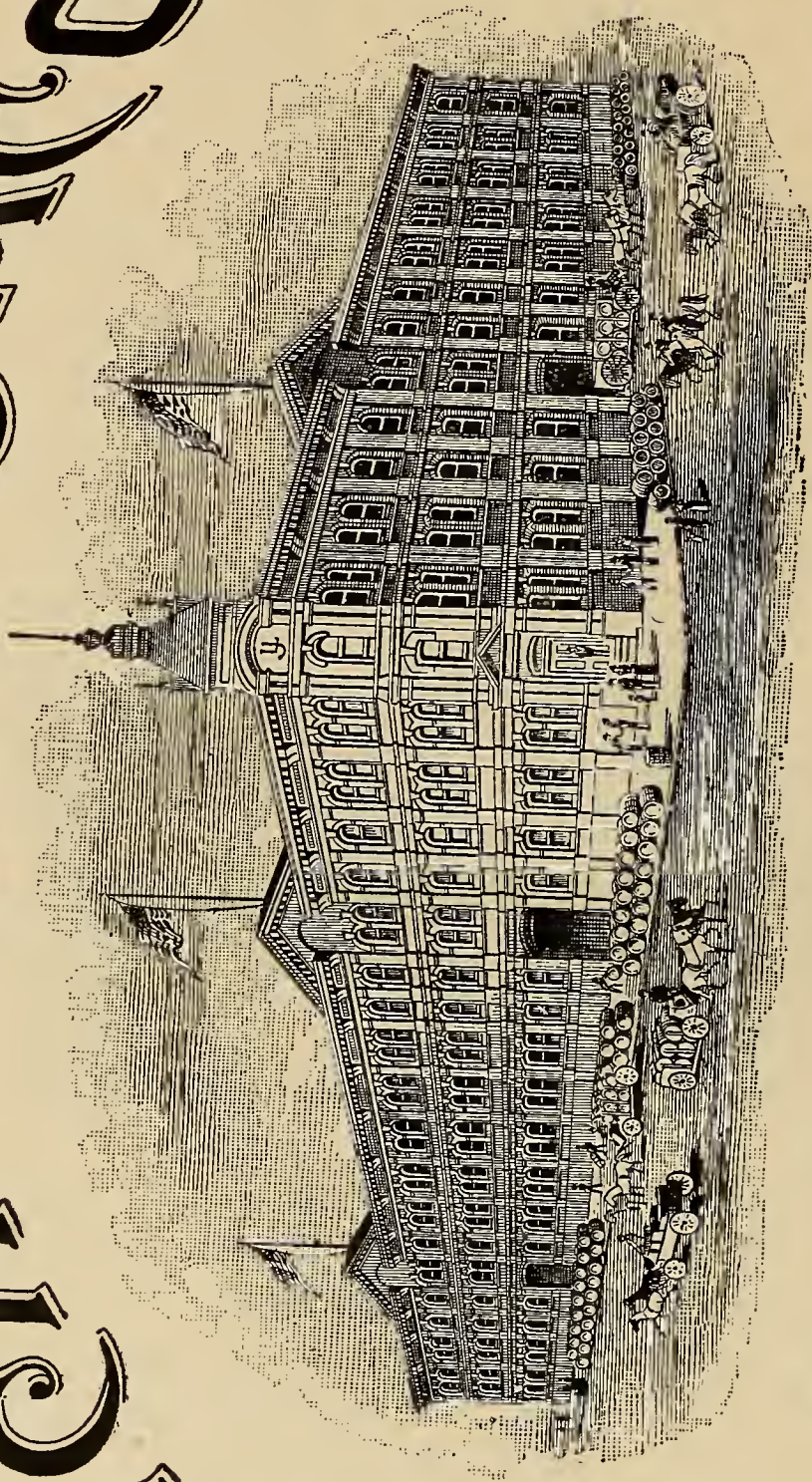


We have adopted the "New Sanitary Can." No solder is used in the manufacture of this can, except on the body seam, the tops and bottoms being put on by a Double Seamer Machine. We make no pretensions to cheap prices, but guarantee the contents of every can to be pure and unadulterated.

SOLD BY ALL FIRST-CLASS GROCERS

**RICHARDSON & ROBBINS CO.**  
DOVER, DELAWARE

# LACHMAN & JACOBI.



California Wines and Brandies

BRYANT & SECOND STREETS, SAN FRANCISCO.

*LACHMAN & JACOBI, 65 N. Moore St., New York.*

Purity—above everything—distinguishes Schlitz beer from the common.

There's a difference, of course, in the barley, the hops, the yeast. We use the costliest materials. But the goodness of Schlitz is mainly due to its healthfulness.

The artesian water used—the absolute cleanliness—the filtering of the beer, and of even the air that touches it—the extreme aging—the sterilizing of every bottle after it is sealed; those are the facts that make Schlitz what it is.

Those are the reasons why the demand for Schlitz exceeds a million barrels annually.

Yet no standard beer—no beer that is good for you—costs less.

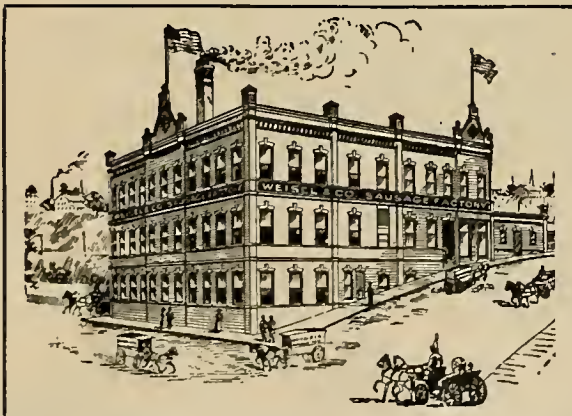
*Ask for the Brewery Bottling.*



## COBB PRESERVING COMPANY

### Canned Goods and Preserves

General Offices: { 37 Elwood Building,  
ROCHESTER, N. Y.      Factories at { FAIRPORT, N. Y.,  
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## WEISEL & CO.

Manufacturers of

### Strictly High Grade Sausage

SPECIALTY:

Frankfort and Vienna Sausages in Cans

609 E. Water St. MILWAUKEE, WIS.

# Mount Vernon Pure Rye Whiskey

Bottled at the Distillery by The COOK & BERNHEIMER CO., New York



Absolute Purity Guaranteed by the Distillers

**The Hannis Distilling Co., Baltimore**

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**FOOD and TECHNICAL EXPERT**

Chemical Analyses, Investigation and Researches.  
Food Products, Analyses and Manufacture.  
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Expert in Patents and Technical Litigation.  
Consultations as to Processes, Products, and Technical  
Control of Factories.

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**CREAM OF KENTUCKY**  
**"THEE WHISKEY"**  
**• THE I. TRAGER • CO •**  
**CINCINNATI OHIO**

# GOLD SEAL

America's Best

## CHAMPAGNE

"SPECIAL DRY"

"BRUT"



"GOLD SEAL" is made by the French process from the choicest grapes grown in our own vineyard, excels any other American wine and equals any imported.

"GOLD SEAL" may be placed on the table of the most fastidious connoisseur without fear of criticism or comparison with any imported champagne.

Why pay twice as much for foreign labels.

"GOLD SEAL" is sold everywhere and served at all leading clubs and cafes.

SARAH BERNHARDT says: I find the Urbana Wine Co.'s "GOLD SEAL" CHAMPAGNE excellent—in fact, superior to many French Champagnes. It surprises me that such a fine wine can be produced in America.

URBANA WINE CO., Urbana, N. Y., Sole Maker.



## Murray Hill Club Whiskey

is *too old* to be bottled in bond

**But**

A careful analysis shows that *this particular brand* for particular people is

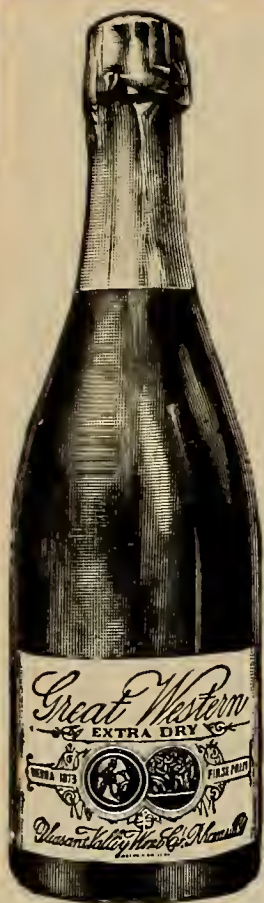
**Chemically Pure,**

**Medicinally Wholesome**

**and Maturely Aged**

**JOS. A. MAGNUS & CO.**

Nos. 121-123-125 East 8th St., Cincinnati, Ohio



# GREAT WESTERN CHAMPAGNE

is the purest and most healthful of wines, and has its place in the best homes for daily use. Received the only

## GOLD MEDAL

(highest award) given to an American champagne at the Paris Exposition of 1900. The present vintage has never been excelled in excellence, and this company have never made or sold an imitation of any kind or character.

**PLEASANT VALLEY WINE CO.**

**SOLE MAKERS, - - RHEIMS, N. Y.**

Sold by respectable wine merchants everywhere.

FERD. HAARMANN CHAS. HAARMANN JOHN HAARMANN

Established 1870

## Haarmann Bros.

Manufacturers of

**Vinegar and Pickles  
Catsup, Mustard,  
Sauces, Etc.**

GOLD MEDAL, HIGHEST AWARD  
TRANS-MISSISSIPPI EXPOSITION 1898

1914-16-18 South 20th St.

Omaha, Neb.

## *The* Clifton Springs Distilling Co.

*DISTILLERS OF*

## Clifton Springs WHISKIES



CINCINNATI, :: OHIO

**Nicelle Olive Oil**

**SEVILLE PACKING COMPANY - NEW YORK**

MADE IN  
NICE, FRANCE  
SOLELY  
FROM SELECTED  
"SOUND" OLIVES

PURITY-ABSOLUTE  
FLAVOR-UNIQUE  
NOTHING FINER  
PRODUCIBLE

**SOLD BY**

**ALL DEALERS**

**Lim-Olas**  
**Baby Lim-Olas**

**"White Label"**  
**Queen Olives**

*White Label Brand*  
**Nicelle Olive Oil**  
Seville Packing Co.  
Exclusive in  
Olives and Olive Products  
New York

U. S. DEPARTMENT OF AGRICULTURE—BUREAU OF CHEMISTRY.  
Bulletin No. 77.

H. W. WILEY, Chief of Bureau.

A perusal of this report shows the Nicelle Olive Oil is pre-eminently the superior of all known brands of olive oil.

|                       | Solid Fatty Acid. | Free Fatty Acid. |
|-----------------------|-------------------|------------------|
| Nicelle               | 3.74%             | .76%             |
| Average of all others | 9.98              | 1.50%            |
| Minimum of all others | 3.74              |                  |

Nicelle Olive Oil is superior to all others on account of the low percentage of fatty acids as this is an index as to the sweetness of the oil and freedom from rancidity.

# Take Your Choice

**Fine Old  
KY TAYLOR**

"A perfect blend"

**OLD CHARTER**

"A straight whiskey"

**WRIGHT & TAYLOR**

DISTILLERS

Louisville, Kentucky

Sole Owners Old Charter Distillery.

Reg. Distv No. 266 5th Ky.

BOTTLED  
IN  
BOND.



**DEAN'S  
ARDENTER**

**Strictly Pure Spices and Mustard**

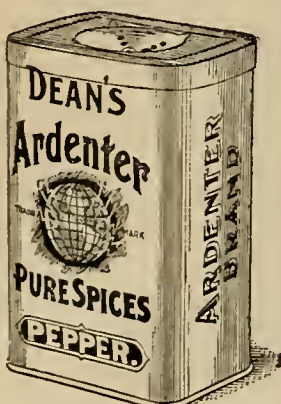
This Mustard is warranted pure, to comply with the food laws of different States.

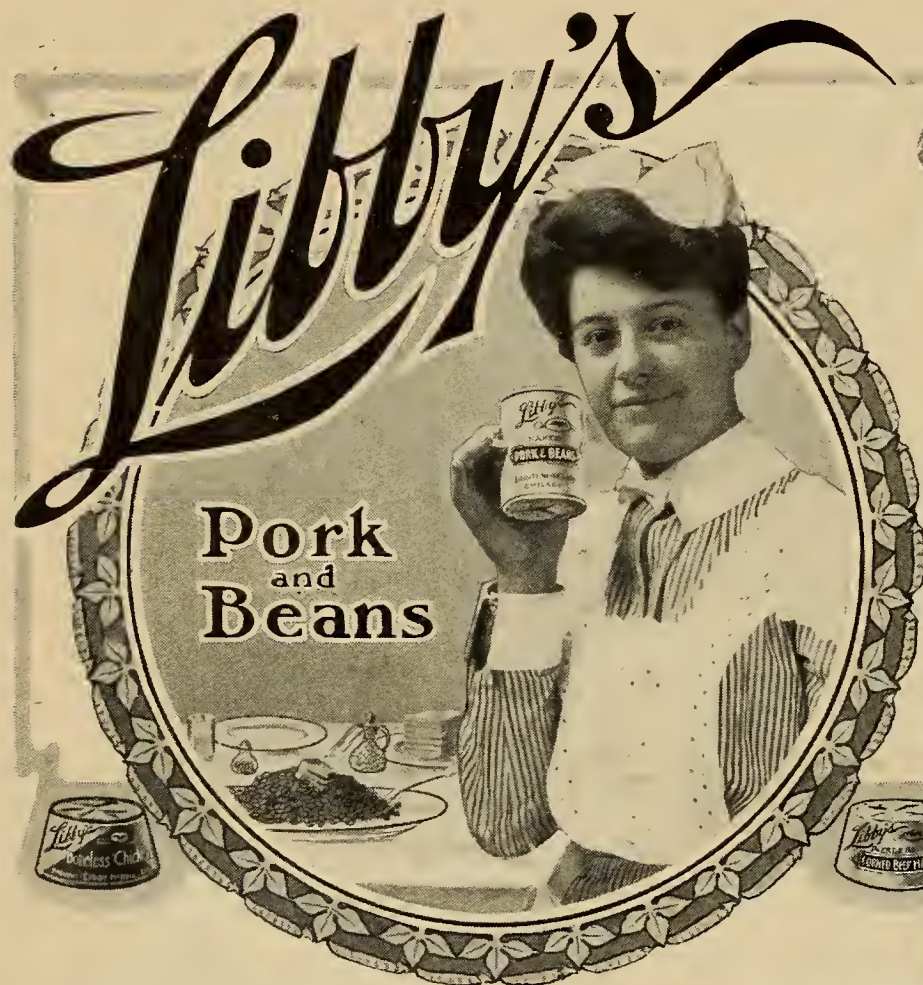
FOR TABLE AND MEDICAL USE

**W. G. Dean & Son**

361 and 363 Washington St.,

NEW YORK





## Libby's Natural Flavor Food Products

A few suggestions for the housewife, suitable for all times—**Breakfast, Luncheon and Dinner**—at any time of the year.

Boneless Chicken    Veal Loaf  
Peerless Dried Beef  
Melrose Pate    Potted Ham  
Vienna Sausage  
Whole Ox Tongues    Soups  
Corned Beef Hash

At All Grocers

Our booklet "Good Things to Eat" sent free upon request. Send five 2c stamps for Libby's Big Atlas of the World.

**Libby, McNeill & Libby.**  
Chicago.



# COLUMBIA

"The Uncolored Catsup"

Made of perfect, selected tomatoes grown on our own farms. Contains no artificial coloring matter.

**COLUMBIA CONSERVE COMPANY**

# GRAND PRIZE

(THE HIGHEST HONOR)

AWARDED TO

## DR PRICE'S

Delicious  
Flavoring Extracts

AT THE  
ST. LOUIS EXPOSITION



# GRAND PRIZE

(THE HIGHEST HONOR)

AWARDED TO



## Dr. Price's

# SUGARS

AT THE  
ST. LOUIS EXPOSITION

A delicate and delicious ice cream can be made, remarkable for smoothness, palatableness and purity, in seven minutes. A boon to the housewife. A labor-saver, economical and wholesome.

With the Jelly Sugar, at a moment's notice, a delicious jelly desert may be prepared.

THE ABOVE MANUFACTURED BY THE  
**PRICE FLAVORING EXTRACT CO.**  
CHICAGO ILL.

